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Routine Health Information Systems Performance in Management of Diabetes and Hypertension in Selected Health Centers in Nairobi, Kenya

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Abstract

Globally, there has been a strong emphasis on enhancing decision-making through the improvement of routine health information systems (RHIS). Numerous studies have explored methods to enhance the quality of RHIS data to achieve this goal. Similarly, at the regional level, several countries have prioritized enhancing their RHIS performance. However, the Ministry of Health's 2019 policy brief has identified challenges related to health organizations' capacity to effectively analyze and utilize DHIS2 information. In light of these challenges, this study sought to investigate the factors influencing RHIS performance in managing diabetes and hypertension within selected health centers in Nairobi. The study's objectives were to examine the impact of technical determinants, organizational determinants, and behavioral determinants on RHIS performance. To guide the study, Delone and McLean's information system success framework will be employed as a theoretical framework. A cross-sectional research design was utilized, and data was collected from a randomly selected sample of 123 healthcare professionals across seven health centers in Nairobi. Data was gathered through the administration of semi-structured questionnaires using the drop-and-pick method. Collected data was scrutinized using SPSS, employing descriptive analysis, correlation analysis, Chi-Square tests, and logistic regression to understand the nature and significance of the effects of technical, organizational, and behavioral determinants on RHIS performance. The findings revealed that technical determinants, such as user-friendliness and the availability of adequate reporting tools, significantly influenced RHIS performance (p=0.020, OR=0.316). Behavioral determinants, including staff confidence and data quality assurance skills, had a strong and significant positive relationship with RHIS performance (p=0.050, OR=0.377). However, organizational determinants, such as funding and staffing, showed no significant relationship with RHIS performance (p=0.526). Thus, the study recommends prioritizing the acquisition of user-friendly RHIS systems and ensuring the availability of adequate reporting tools to improve technical aspects. Additionally, targeted training programs should be implemented to enhance staff confidence, proficiency, and data quality assurance skills. Finally, strengthening the implementation of national policies, such as the Kenya National e-Health Policy and the Kenya Health Information System Policy, will ensure alignment with RHIS goals and improve performance across health centers.

Keywords: *Routine, Health Information Systems, Performance, Management of Diabetes, and Hypertension in Selected Health Centers in Nairobi, Kenya*

1.1 Background to the Study

The World Health Organization (2019) defines a Health Information System (HIS) as an all-encompassing and coordinated setup for gathering, organizing, analyzing, storing, and sharing health data for various uses. Health information constitutes a fundamental component of any healthcare system, providing essential evidence upon which critical decisions are based. The global response to COVID-19 exemplifies the crucial role of health data and information in guiding decisions concerning vaccine development and public health interventions. Nguefack-Tsague et al. (2020) further emphasize that the production of health data plays a pivotal role in enabling the effective operation of various other elements within the health system, including service provision, leadership, financial management, and the healthcare workforce. Globally, the functionality of routine health information systems (RHIS) has attracted considerable attention, with numerous studies focusing on improving RHIS data quality and utilization. Hoxha et al. (2022) demonstrate that in Australia, RHIS performance is maintained through the incorporation of electronic methods for maintaining general patient records. Similarly, Vaganova et al. (2017) report that Russia has enhanced RHIS performance through the development and automation of systems across healthcare institutions over the years. A systematic review conducted by Saigí-Rubió et al. (2021) reveals that RHIS interventions across Europe show promising results, indicating regional commitment to system improvement.

At the regional level, various countries have prioritized enhancing their RHIS performance to strengthen decision-making capabilities. Performance of routine health information system management in Liberia (2014) illustrates successful interventions including creating conducive environments, improving HIS components, and enhancing staff capacity to improve RHIS performance. However, challenges persist across the region. Assegaai et al. (2018) found that South Africa's DHIS contained routine data of low quality, thereby undermining reliable assessment of primary healthcare system performance. In Tanzania, Hoxha et al. (2022) identified that community-level data was poorly integrated with RHIS, resulting in discrepancies and compromised data utilization. Within the Kenyan context, Kirimi (2017) explains that DHIS2 software is employed for the aggregation and generation of integrated and patient-specific data, enabling health facilities to generate monthly reports in paper format that are subsequently inputted into the system. Additionally, DHIS2 provides guest user accounts to individuals without data input authorization, allowing them to retrieve and analyze data, thus facilitating access to health information for initiatives aimed at enhancing overall healthcare system performance. Ajwang et al. (2019) highlight in a Ministry of Health policy brief that persisting challenges exist in various health organizations' capacity to effectively analyze and utilize DHIS2 information. The report also identifies inadequate investment in prioritizing health information systems at the county level as an ongoing challenge. Based on these documented challenges outlined in the policy brief, this research assessed the determinants of RHIS functionality in the management of diabetes and hypertension in selected health centers in Nairobi.

1.2 Problem Statement

According to Abayomi et al. (2018) and Maiga et al. (2019), RHIS implementation in many developing countries is deemed ineffective due to a multitude of factors. Similarly, Kenya's Ministry of Health continues to note HIS-related challenges especially at county level (Ajwang et al., 2019). Besides, there are limited studies on the determinants of the performance of RHIS in different counties; Kirimi (2017) focused on Garissa County. This signals the need for more studies

on this, in order to develop practical recommendations that could boost the effectiveness of RHIS across the country. This study focused on the determinants of the operational success of RHIS in Nairobi. Since 2018, a new HIS called the Non-Communicable Diseases (NCD) Quality Management System has been piloted in 10 facilities across Nairobi. Nevertheless, despite the implementation of this HIS at some of these centers, some challenges especially pertaining the health records of patients suffering from diabetes and hypertension still lurk. For example, the records made in the patients' records book are sometimes inconsistent with those made in the HIS. Thus, this study sought to investigate the determinants of how well RHIS operates in management of diabetes and hypertension in selected health centers in Nairobi to address the lurking challenges.

1.3 Study Objective

The core objective of this study was to look into the determinants of RHIS performance in management of diabetes and hypertension in selected health centers in Nairobi.

1.3.2 Specific Objectives

i. To analyze the effect of technical determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi.
ii. To evaluate the effect of organizational determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi.
iii. To analyze the effect of behavioral determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi.

2.0 Literature Review

Routine Health Information Systems (RHIS) function as integrated frameworks designed to collect, organize, analyze, store, and disseminate health-related data for decision-making and policy formulation (World Health Organization, 2019). RHIS performance is primarily measured by the quality and use of information, where data quality indicators include accuracy, timeliness, relevance, and completeness (Kirimi, 2017; Aqil & Lippeveld, 2017). Studies consistently underscore the critical role of RHIS data quality in effective health system management and evidence-based policymaking. Globally, studies reveal variability in RHIS performance across regions. For instance, Krishnan et al. (2017) found that computerization of health information systems in rural India resulted in data accuracy rates exceeding 95%. In contrast, Haftu et al. (2021) observed a lower overall RHIS data quality of 76.22% in Addis Ababa, Ethiopia. Further research in Ethiopia's Jimma Zone indicated inconsistencies, with completeness, timeliness, and accuracy levels ranging from 33% to 76%. Similarly, Bhattacharya et al. (2019) reported that health facility-reported data in Nigeria were incomplete in at least 40% of cases. These findings highlight ongoing challenges in achieving consistent RHIS performance globally. In Kenya, findings also reveal mixed performance. Cheburet and Odhiambo-Otieno (2016) reported only 44% data completeness and 46% timeliness at Uasin Gishu County Referral Hospital, suggesting substantial gaps. Conversely, higher performance was recorded in Garissa Sub-County, where data accuracy, completeness, and timeliness were 79.1%, 86.7%, and 70.9%, respectively (Kirimi, 2017). These disparities demonstrate the need to investigate factors influencing RHIS performance within local contexts, particularly in chronic disease management settings such as diabetes and hypertension care. Technical determinants refer to elements related to specialized knowledge and technology essential for improving RHIS processes and outcomes (Azar & Ciabuschi, 2017). These include appropriate metric design, user-friendly software, and the availability of reporting tools. Poorly designed

metrics and complex software reduce motivation and confidence among RHIS users. Lippeveld (2017) reported that technical challenges significantly affected RHIS in Zambia, necessitating continuous technical support.

Similarly, Gesicho and Babic (2021) found that technical factors contributed to disparities in RHIS data quality across Kenyan health facilities. Conversely, Kirimi (2017) observed no significant relationship between technical complexity and RHIS performance in Garissa, highlighting the need for further examination. In other regions, studies show similar mixed results. While Lippeveld (2017) emphasized the importance of addressing hardware and software constraints, GlèlèAhanhanzo et al. (2014) in Benin found no statistically significant link between technical determinants and RHIS data quality. In Kenya, Mucee (2016) reported that the absence of adequate computer resources and insufficient staff skills in data analysis were major barriers to RHIS use. These findings collectively suggest that technical determinants may play varying roles depending on the health system and contextual factors. Organizational factors involve institutional policies, supervisory systems, leadership support, and resource allocation, all of which shape RHIS implementation and use. Inadequate training, poor leadership, and weak supervision have been identified as common organizational barriers (Al Mulhem, 2020; Al Hadwer et al., 2021). Studies in Thailand reported that managerial facilitation strongly influences RHIS utilization (Kijsanayotin, Pannarunothai, & Speedie, 2019). Similarly, GlèlèAhanhanzo et al. (2014) found a positive relationship between organizational support and RHIS data quality in Benin. However, findings from Kenya remain mixed. While Samis, Odhiambo-Otieno, & Adoyo (2016) linked financing and training to RHIS success, Kirimi (2017) found no significant association between funding and RHIS performance in Garissa Sub-County.

Research in Malawi corroborates the importance of organizational factors, reporting that weak supervisory systems adversely affect RHIS data quality (O'Hagan et al., 2017). In contrast, other studies suggest that even when organizational support exists, RHIS performance may not improve without addressing behavioral and technical gaps. These inconsistencies underscore the complexity of RHIS performance determinants, warranting comprehensive assessment across multiple domains. Behavioral determinants encompass RHIS users' skills, confidence, attitudes, and motivation, all of which directly influence RHIS performance (Hoxha et al., 2022; Middlemass, Vos, & Siriwardena, 2017). In Uganda, behavioral factors such as task proficiency, problem-solving skills, and confidence were statistically significant predictors of RHIS use. Similarly, studies in Thailand highlighted voluntariness and intention to use as key drivers of HIS adoption (Kijsanayotin et al., 2019). In Benin, GlèlèAhanhanzo et al. (2014) reported a strong association between health workers' motivation and data quality. Kenyan studies also indicate that behavioral factors can act as facilitators or barriers. For instance, Mucee (2016) and Gesicho & Babic (2021) found that competence and motivation influenced RHIS reporting, while Kirimi (2017) reported no significant link between confidence and RHIS performance.

3.0 Research Methodology

The study adopted a descriptive cross-sectional research design to evaluate factors influencing the effectiveness of RHIS in Nairobi. The study was conducted in seven strategically selected health centers across Nairobi County, ensuring a balance of urban and peri-urban contexts to capture varied experiences related to RHIS use in the management of diabetes and hypertension. The target population comprised 182 healthcare workers from these facilities, from which a sample size of 123 respondents was determined using Krejcie and Morgan's sampling table. Random sampling was

employed in selecting participants. Data was collected using a semi-structured questionnaire consisting of multiple-choice and Likert-scale questions, designed to capture demographic details and responses related to the study variables. Prior to data collection, the tool was pre-tested on 18 healthcare professionals, approximately 10% of the study population, to ensure clarity and relevance. Validity was confirmed through expert reviews, while reliability testing produced a Cronbach's Alpha coefficient of 0.716, indicating acceptable internal consistency. The drop-and-pick method was used to distribute the questionnaires, and data analysis was conducted using SPSS, applying descriptive statistics, Pearson Chi-Square tests, correlation analysis, and logistic regression to identify significant determinants of RHIS performance. Ethical approval was obtained from Kenyatta University's Ethics Review Committee, NACOSTI, and Nairobi County authorities, and all participants provided informed consent.

4.0 **Demographic Characteristics of Participants**

Selected participants had varying demographic characteristic reflecting a representative sample of the healthcare workforce in the larger population. Among the 101 respondents, 62.4% were female and 37.6% male, with most aged 36–45 years (41.6%), followed by 26–35 years (26.7%), while those above 55 years were least represented (8.9%). Educationally, 55.4% held a diploma, 28.7% a bachelor's degree, and 13.9% a master's degree or higher, indicating a highly educated workforce, with only 2% having a certificate. In terms of work experience, 60.4% had worked for three or more years, 25.7% for 1–3 years, and 13.9% for less than a year, suggesting strong institutional knowledge. RHIS engagement was high, with 52.5% using it weekly, 28.7% monthly, and 18.8% daily, and none using it quarterly or annually.

Table 1: Demographic Summary

		Count	Column N %
Gender	Male	38	37.6%
	Female	63	62.4%
Age	Below 26	0	0.0%
	26-35	27	26.7%
	36-45	42	41.6%
	46-55	23	22.8%
	Above 55	9	8.9%
Highest level of education	Certificate	2	2.0%
	Diploma	56	55.4%
	Degree	29	28.7%
	Masters and above	14	13.9%
How long have you worked at this Health Centre?	Less than a year	14	13.9%
	1-3 years	26	25.7%
	3 and above years	61	60.4%
How often do you use RHIS as part of your work?	Daily	19	18.8%
	Weekly	53	52.5%
	Monthly	29	28.7%
	Quarterly	0	0.0%
	Annually	0	0.0%

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4.1 Technical Determinants in The Management of Diabetes and Hypertension

The first study objective was to analyze the effect of technical determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi. Descriptive statistics were computed to evaluate perceptions of technical determinants of RHIS tools. The system's user-friendliness received a mean score of 3.30 (SD = 1.404), corresponding to a neutral stance, indicating potential for improvement in tool simplification. Perceived complexity of reporting tools recorded a higher mean of 4.17 (SD = 1.242), reflecting agreement that forms and registers are complicated, which may impede efficient information utilization. Lastly, the adequacy of reporting forms yielded a mean of 3.70 (SD = 1.460), suggesting mixed views regarding resource availability.

Table 2: Level of Agreeableness with Technical Determinants

Statements	N	Mean	Std. Dev
The routine health information system (RHIS) employed at the diabetes and hypertension clinic of this facility is designed to be user-friendly	101	3.30	1.404
The reporting forms and registers utilized in the hypertension and diabetes clinic of this facility for the routine health information system (RHIS) are complicated in nature	101	4.17	1.242
The diabetes and hypertension clinic in this Health Center has adequate reporting forms and registers	101	3.70	1.460

The relationship between the technical determinants and performance of RHIS was further evaluated using a correlation analysis. The Spearman's coefficient in this case indicated the nature and strength of this relationship. The Spearman correlation coefficient (r=0.189) suggests a weak but positive relationship between technical determinants and RHIS performance.

Table 3: Correlation Between Technical Determinants and Performance of RHIS

			PERF	Tech_Determinants
Spearman's rho	PERF	Correlation Coefficient	1.000	.189
		Sig. (2-tailed)	.	.058
		N	101	101
	Tech_Determinants	Correlation Coefficient	.189	1.000
		Sig. (2-tailed)	.058	.
		N	101	101

A Chi-square test was conducted to assess whether the association between technical factors and RHIS effectiveness in the selected health facilities was statistically significant. As presented in Table 4.5, the results indicate that the overall association between technical determinants and RHIS performance was not significant at the 5% level (χ^2, $p = 0.070 > 0.05$). Similarly, the likelihood ratio tests yielded $p = 0.090$, confirming the absence of a statistically significant association. However, the linear-by-linear association test produced a p-value of 0.017 ($p < 0.05$), indicating a significant linear trend between the variables. This suggests that improvements in technical determinants are associated with enhanced RHIS performance.

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Table 4: Chi-Square Test for Technical Determinants

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	63.172[a]	48	.070
Likelihood Ratio	61.596	48	.090
Linear-by-Linear Association	5.744	1	.017
N of Valid Cases	101		

a. 60 cells (95.2%) have expected count less than 5. The minimum expected count is .06.

4.2 Organizational Determinants in The Management of Diabetes and Hypertension

The second study objective was to evaluate the effect of organizational determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi. Descriptive analysis was performed to assess the level of agreement with statements representing organizational determinants. Staff training on RHIS recorded the highest mean score of 4.67 (SD = 0.814), suggesting that training is well-established across the facilities. Conversely, financial support for RHIS activities had a relatively low mean of 2.91 (SD = 1.457), indicating inadequate funding for related operations. Adequate staffing for RHIS tasks scored a high mean of 4.44 (SD = 1.099), implying that staffing levels are generally considered sufficient.

Table 5: Level of Agreeableness with Organizational Determinants

Statements	N	Mean	Std. Dev
The staff at the diabetes and hypertension clinic at this Health Center are trained on the routine health information system	101	4.67	.814
The diabetes and hypertension clinic at this Health Center possesses sufficient financial resources to support the activities of the routine health information system	101	2.91	1.457
The diabetes and hypertension clinic at this Health Center is adequately staffed with individuals responsible for carrying out routine health information system (RHIS) tasks	101	4.44	1.099

A correlation analysis was done to evaluate the direction and intensity of the relationship between organizational factors and the performance of RHIS. A Spearman coefficient of 0.08 was attained, indicating that organizational determinants had a weak but positive relationship with RHIS performance.

Table 6: Correlation Between Organizational Determinants and RHIS Performance

			PERF	Org_Determinants
Spearman's rho	PERF	Correlation Coefficient	1.000	.008
		Sig. (2-tailed)	.	.940
		N	101	101
	Org_Determinants	Correlation Coefficient	.008	1.000
		Sig. (2-tailed)	.940	.
		N	101	101

A Chi-square test of association was also employed to determine the significance of the relationship between organizational factors and the performance of routine health information systems in the selected facilities. The Pearson Chi-square value was 0.022, which falls below the 0.05 threshold, indicating statistical significance. This suggests a meaningful association between organizational determinants and RHIS performance. However, the likelihood ratio and linear-by-linear association were not significant (p>0.05), with the latter suggesting that there is no linear trend. This means, performance of routine health systems does not increase steadily with increasing organizational support.

Table 7: Chi-Square Test for Organizational Determinants

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	69.688[a]	48	.022
Likelihood Ratio	46.691	48	.527
Linear-by-Linear Association	.173	1	.677
N of Valid Cases	101		

a. 60 cells (95.2%) have expected count less than 5. The minimum expected count is .03.

4.3 Behavioral Determinants in The Management of Diabetes and Hypertension

The final study objective was to analyze the effect of behavioral determinants on the performance of RHIS in management of diabetes and hypertension in selected health centers in Nairobi. Descriptive analysis was conducted to evaluate respondents' level of agreement with items representing behavioral determinants. Proficiency in ensuring data quality among healthcare professionals recorded a mean score of 3.96 (SD = 1.414), indicating relatively good competence. Staff proficiency in performing RHIS tasks scored a mean of 3.84 (SD = 1.325), suggesting that while most staff feel capable, there is room for improvement. Additionally, self-assurance in executing RHIS tasks had a high mean of 4.01 (SD = 1.179), highlighting strong confidence among staff in carrying out RHIS-related responsibilities.

Table 8: Level of Agreeableness with Behavioral Determinants

Statements	N	Mean	Std. Dev
The staff at the diabetes and hypertension clinic in this Health Center have data quality checking skills	101	3.96	1.414
The staff members at the diabetes and hypertension clinic in this Health Center possess the necessary skills to effectively perform routine health information system (RHIS) tasks, including data analysis and interpretation	101	3.84	1.325
The staff members at the diabetes and hypertension clinic in this Health Center demonstrate confidence in carrying out routine health information system (RHIS) tasks, including data analysis and interpretation	101	4.01	1.179

A correlation analysis assessing the nature and strength of the relationship between behavioral determinants and RHIS performance indicated that there was a moderate positive (r=0.333) as per table 4.8. This suggests that behavioral determinants strongly influence RHIS performance.

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Table 9: Correlation Between Behavioral Determinants and RHIS Performance

			PERF	Behav_Determinants
Spearman's rho	PERF	Correlation Coefficient	1.000	.333**
		Sig. (2-tailed)	.	.001
		N	101	101
	Behav_Determinants	Correlation Coefficient	.333**	1.000
		Sig. (2-tailed)	.001	.
		N	101	101

A Chi-square test was performed to examine the association between behavioral factors and RHIS performance. The Pearson Chi-square test yielded a p-value of 0.002, indicating a statistically significant relationship ($p < 0.05$). Similarly, the likelihood ratio ($p = 0.029$) and the linear-by-linear association were significant, suggesting a positive linear trend whereby improvements in behavioral attributes correspond with enhanced RHIS performance.

Table 10: Chi-Square Test for Behavioral Determinants

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	81.644[a]	48	.002
Likelihood Ratio	68.275	48	.029
Linear-by-Linear Association	9.771	1	.002
N of Valid Cases	101		

a. 61 cells (96.8%) have expected count less than 5. The minimum expected count is .06.

4.4 Regression Analysis

Logistic regression analysis was conducted to determine the extent to which technical, organizational, and behavioral factors influence the effectiveness of RHIS in managing diabetes and hypertension. This approach aimed to identify the most significant predictors of RHIS performance and highlight priority areas for strategic intervention to enhance system efficiency. The findings suggest that the various determinants contribute significantly to RHIS performance.

Table 11: Omnibus Tests of Model Coefficients

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	11.442	3	.010
	Block	11.442	3	.010
	Model	11.442	3	.010

Table 12: Hosmer and Lemeshow test

Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	2.280	8	.971

The analysis revealed a statistically significant association between technical determinants and RHIS functionality (p = 0.020), with an odds ratio of 0.316. This implies that technical factors such as system user-friendliness and adequacy of reporting tools substantially enhance RHIS performance, reducing the likelihood of poor performance by approximately 68.4%. Behavioral determinants were marginally significant (p = 0.050), with an odds ratio of 0.377, indicating that factors like staff confidence, proficiency, and data quality skills lower the odds of poor RHIS performance by about 62.3%. Conversely, organizational determinants did not exhibit a statistically significant relationship (p = 0.526; odds ratio = 0.701), suggesting that elements such as training, funding, and staffing may not independently predict RHIS performance in this context.

Table 13: Variables

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Tech_Determinants	-1.152	.494	5.441	1	.020	.316	.120	.832
	Org_Determinants	-.355	.560	.403	1	.526	.701	.234	2.100
	Behav_Determinants	-.976	.498	3.846	1	.050	.377	.142	.999
	Constant	7.128	3.309	4.641	1	.031	1245.948		

a. Variable(s) entered on step 1: Tech_Determinants, Org_Determinants, Behav_Determinants.

Table 14: Hypotheses Outcomes

Hypothesis	Outcome
Technical determinants have no significant effect on the performance of routine health information systems in management of diabetes and hypertension in selected health centers in Nairobi	Rejected
Organizational determinants have no significant effect on the performance of routine health information systems in management of diabetes and hypertension in selected health centers in Nairobi	Not rejected
Behavioral determinants have no significant effect on the performance of routine health information systems in management of diabetes and	Rejected

hypertension in selected health centers in Nairobi

5.0 **Conclusion**

The study explored the determinants of RHIS performance in managing diabetes and hypertension across selected health centers in Nairobi, focusing on technical, organizational, and behavioral factors. The findings demonstrate that technical determinants, such as system user-friendliness and the availability of adequate reporting tools, have a significant positive impact on RHIS performance. This highlights the necessity of ensuring that RHIS is technically efficient to improve data quality and utilization in health centers. However, the study found no notable relationship between organizational determinants and RHIS performance, suggesting that factors such as funding, training, and staffing may not independently influence RHIS effectiveness. This underscores the need to integrate organizational efforts with other determinants to achieve meaningful improvements in system performance. The study also concludes that behavioral determinants, including staff confidence, task proficiency, and data quality skills significantly enhance RHIS performance. This demonstrates the pivotal role of human resource capabilities in determining the success of health information systems.

6.0 Recommendation

First, to improve RHIS performance, health centers should prioritize the acquisition of user-friendly systems and ensure the availability of adequate reporting tools by investing in system design improvements and addressing technological gaps. Second, while organizational determinants alone may not significantly impact RHIS performance, health facilities should ensure adequate funding and training to complement technical and behavioral enhancements, thereby addressing broader systemic challenges. Third, targeted training programs should be provided to enhance staff confidence, proficiency, and data quality assurance skills through capacity-building initiatives such as workshops and on-the-job mentorship. Fourth, the government should strengthen the implementation and enforcement of the Kenya National e-Health Policy and the Kenya Health Information System Policy by providing clear operational guidelines, ensuring accountability, and offering regular monitoring, technical, and financial support to health centers struggling with compliance. Finally, future research should examine moderating factors such as government policies and external funding in influencing RHIS performance, conduct longitudinal studies to understand long-term impacts of technical, organizational, and behavioral improvements, and expand research to other counties in Kenya to assess the generalizability of these findings.

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