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Influence of Monitoring and Evaluation Strategy on Implementation Of Donor Assisted E-Health Management Systems In Public Health Facilities In Nakuru County

Purity CHEMUTAI, Maina WAIGANJO, Phillip RAGAMA & John, K. TANUI

¹Kabarak University, P.O. Box Private Bag, Kabarak, 20157, Kenya

Tel: +254 0721 375778, Email: boseck.purity@gmail.com

Abstract

The purpose of this study was to analyze the influence of monitoring and evaluation strategy on implementation of donor assisted e-health management systems in public health facilities in Nakuru County, Kenya. Descriptive survey research design was used targeting the health Ministry in the national and county governments and involved public health facilities and partnering NGOs. Using quantitative techniques on data collected from 79 persons comprising e-Health program managers and staff, the study established that M&E strategy had a statistically significant relationship with the implementation of e-health management systems in public health facilities in Nakuru County ($t = 2.01$, $p < 0.05$) implying that it was an influential factor which must be prioritized in the implementation process. The study recommends that the e-health system implementers ensure that in addition to the M&E evaluations, quality evaluation and reporting be publicized so as to raise the quality standards of the system after implementation.

Keywords: E-Health Management Systems, Implementation, Monitoring and Evaluation strategy

1. Introduction

The World Health Organization (WHO) and International Telecommunication Union (ITU) defines electronic health system (e-Health) as a computerized medical record used to capture, store, and share information among healthcare providers in an organization, supporting the delivery of healthcare services to patients (WHO, 2016). In this definition the data is collected from the medical records either paper based or electronic and later processed using Health Management Information System (HMIS) for statistical reports and clinical management (Kenya National eHealth Policy, 2016). The collective systems that can handle both statistical data processing and clinical applications are often referred to as e-Health or Health Information Technologies (HIT) (Malunga & Tembo, 2017). Hage, Roo, van Offenbeek and Boonstra (2013), however, describe e-health as any interactive communications and information technology aimed at enhancing community quality of life and/or individual health outcomes. Following this definition, health information can be accessed from the thousands of websites offering health information of varying quality used by health professionals as well as by laypersons (Ross, Stevenson & Lau, 2015). Such online health information has become one of the most important information sources for people seeking health information in recent years. In the current study, the focus will be on the definition supplied by WHO (2016).

E-health allows health organizations to streamline many of their processes and provide services in a more efficient and cost-effective manner. Planning to exploit the latest technologies in the healthcare industry is an important strategy for many healthcare organization and



governments to enhance healthcare services so as to reduce operations costs. However, given the promising results on cost-effectiveness, such interventions are not as widely used as might be expected. There is enough evidence in research that suggests e-health is still characterized by low adoption in public healthcare management systems (Lieneke et al., 2017; Malunga & Tembo, 2017; Murray, May & Mair, 2010). The key perspectives emerging from these studies as having the most significant bearing on e-health implementation success include the technological context, product features, and the user and organizational context (Lieneke et al., 2017). These have been used to inform implementation strategies in the past, however, their successes have not been quite forthright.

1.1.1 Strategy Implementation

A strategy is a unified, comprehensive and integrated plan that relates the strategic advantages of the firm to the challenges of the environment. Strategies are methods or plans chosen to bring about a desired future, such as achievement of a goal or solution to a problem. Strategic management scholars agree with Porter (1985) that strategy is a competitive plan that relates to the overall pattern activities and provide a sense of direction to an organization (Johnson, Whittington & Scholes, 2011). It is designed to ensure that the basic objectives of the organization are achieved through proper execution by the organization (Thompson & Strickland, 2005). According to Porter (in Allen & Helms, 2006), strategies can be grand or generic. Grand strategies are long-term and can be customized to a specific firm or large organization such as government, while generic strategies can be pursued by any type or size of organization (Wheelen & Hunger, 2008).

Effective and efficient strategy implementation involves developing an organization having potential of carrying out strategy successfully, disbursement of abundant resources to strategy-essential activities, creating strategy-encouraging policies, employing best policies and programs for constant improvement, linking reward structure to accomplishment of results and making use of strategic leadership (Cespedes & Piercy, 2010). Excellently formulated strategies will fail if they are not properly implemented. In addition, it is essential to note that strategy implementation is not possible unless there is stability between strategy and each organizational dimension such as organizational structure, reward structure and resource-allocation process.

Several barriers have been identified in the implementation of the e-health system that affect even among those willing to adopt the system. For example, Hage et al., (2013) in their systematic review of various studies on e-Health implementation identified funding and costs, low availability, low accessibility, not fulfilling a demand and poor user friendliness as barriers to implementation of the e-Health system. A study carried out in the Netherlands by Lieneke et al.,(2017) found that while health care professionals and patients acknowledge the benefits arising from the implementation and use of eHealth services in daily practice, they were concerned with barriers such as availability, allocation of resources, financial aspects, reliability, security, e-Health system confidence, and the lack of education and training. Implementation strategies in the context of e-health are assumptions of how change needs to be executed, formulated with the aim to implement e-Health (Hage, Roo, Van Offenbeek & Boonstra, 2013). However, the studies done so far have not examined the efficacy of strategies used in implementing e-health systems. As such, the approach to e-health implementation varies from organization to organization and also across different contexts and their impact remains relatively unknown.



1.1.2 E-Health Policy in Kenya

In a bid to realize improved healthcare for its citizens in Kenya, the Ministry of Health identified and prioritized the development and operationalization of a comprehensive National eHealth Policy meant to clearly outline and guide stakeholders on the strategic direction on the use of ICTs in the health sector. It is envisaged that the National and County Governments will benefit immensely from this policy framework as it will guide them as they plan and budget for healthcare services at all levels of care. Moreover, this policy is meant to accelerate the realization of Sustainable Development Goals (SDGs) and foster economic growth. Currently, in the country, more than 35 counties have implemented at least one eHealth project. Of these, most projects are concentrated Nairobi, Mombasa and Kisumu Counties projects (KeHP, 2016). However, while peri-urban regions like Busia, Kakamega and Vihiga counties also had a good number of eHealth projects, counties in Arid and Semi-Arid regions such as Turkana, Wajir, Garissa, Samburu, Marsabit and Mandera had the least number of eHealth systems and interventions. Regarding ownership and investment, the policy document revealed that most of the eHealth projects implemented were mostly funded by development partners and Non-Governmental Organizations (NGOs) that led to concerns over issues of sustainability and ownership. Consequently, the eHealth policy and regulatory framework was developed to provide guidance on ownership of eHealth.

2. The Problem

In Kenya, the National e-Health Policy (2016) recognizes that there are marked disparities in e-Health adoption across geographical and administrative boundaries with the major cities in the country showing more promising adoption rates compared to the rural areas. The same trends can be observed across different counties. Mulwa (2013) found out that in Kenyan hospitals, data is entered manually and is thus bound to human error, misplacement or loss of files, and thus may increase the cases of misdiagnosis of a patient. A study by Chebole (2015) in Nakuru County found that the e-Health systems had been fully adopted by 21% of the implementers and a significant number of medical practitioners still using a hybrid system consisting of both paper and electronic systems. Therefore, it can be deduced that implementation of e-Health is partially successful in the country at best. However, the strategies used in adoption vary due to the complexity of the processes of change at the micro level for professionals and patients and at the meso level for health-care organizations themselves (Ross, Stevenson, Lau & Murray, 2016). Majority of the organizations carry out monitoring and evaluation (M&E) for tracking and reviewing the efficacy of the implementation process. However, the effectiveness of M&E as a strategy for e-health implementation has not been examined in previous studies on e-health, therefore, motivating the need for the study to examine the influence of Monitoring and Evaluation strategy on implementation of donor assisted e-health management systems in Kenya focusing on public health facilities in Nakuru County.

3. Objective of the Study

The main objective of the study was to assess the influence of Monitoring and Evaluation strategy on implementation of donor assisted e-health management systems in public health facilities in Nakuru County.

4. Literature Review

4.1 Monitoring and evaluation and implementation of e-health management systems



Monitoring and evaluation are thinly distinct elements within the project management cycle but are highly dependent and mutually of significant importance to project sustainability (UNDP, 1997). Monitoring is the process through which the essential aspects of project implementation such as reporting, usage of funds, record keeping, and review of the project outcomes are routinely tracked with an aim of ensuring the project is being implemented as per the plan (Mackay, 2010). Monitoring is undertaken on a continuous base to act as an internal driver of efficiency within the organization's project implementation processes and its main agenda is to develop a control mechanism for projects (Crawford & Bryce, 2003). Monitoring and evaluation should offer comprehensive and relevant data that will support decision making. According to Gianelle and Kleibrink (2015) Monitoring should achieve three fundamental purposes, Firstly, inform about what strategy is achieved and whether execution is on track and making the information available to decision makers; Secondly, clarify the rationality of intervention of the strategy and make it coherent to the stakeholders and lastly, support constructive involvement and participation of stakeholders through transparent communication and encourage trust building.

Evaluation is a definite and systematic approach geared towards reviewing an ongoing project to ensure that it meets the goals or objectives that were fundamental to its undertaking (Uitto, 2004). Project evaluation serves various purposes; first, to inform decisions for project improvement by providing relevant information for decision making concerning setting priorities, guiding resource allocation, facilitating modification and refinement of project structures and activities and signaling need for additional personnel (Mulwa, 2008). Secondly, evaluation provides a process of learning. By learning from the past, one can improve the future. Further, evaluation helps project managers to develop new skills, open up to the capacity of constructive self-criticism, to objectivity and to improve on future planning as a result. Through evaluations the organization in extension conducts a SWOT analysis since the strengths, weaknesses, opportunities and challenges of the projects are taken into account (Arbab-Kash et al., 2014). Evaluation creates future benchmarks to guide evaluations of other projects. It also helps in creating a knowledge bank for management which is an ideal trend in contemporary world where organizations are leaning towards knowledge management in project management (Calder, 2013). Lastly through evaluations, project managers are able to access how projects fared in terms of meeting the budgetary limits as well as in terms of efficiency.

Key aspects of monitoring and evaluation are the setting up of the system, implementing the system, involving all stakeholders and communicating the results of the monitoring and evaluation process. A monitoring and evaluation system should be as relevant as possible to the organization to ensure its reliability and independence (Garg, 2006). An effective monitoring and evaluation system should be able to offer conclusive information that can effectively be utilized towards better project success (Mulwa, 2008). Through the system, any stakeholder should be able to identify the potential benefits of the project, ways of enhancing screening and tracking of the project as well as offer an outline of the successes, challenges and opportunities for future projects undertakings. In order to foster the support of the employees, an effective monitoring and evaluation system should seek to enhance the communication and interaction among the personnel which will help to build up teamwork within the project (Blackstock, Kelly, & Horsey, 2007). Similarly, the involvement of the project stakeholders should not be downplayed as these are the people who own and are directly affected by the project successes and impacts.



Effectiveness of the M&E system focuses on expected and achieved accomplishments, processes, examining the results chain, contextual factors and causality, to understand achievements or the lack of achievement. Project objectives of a development project should be consistent with the requirements of beneficiaries and organization's strategies, and the extent to which they are responsive to the organization's corporate plan and human development priorities such as empowerment and gender equality. Development initiatives and its intended outputs and outcomes should also be consistent with national and local policies and priorities (Sipopa, 2009). Monitoring and evaluation activities enable the stakeholders determine whether the body undertaking project implementation has adequate legal and technical mandate to implement projects on their behalf (Soludo, 2006). Post completion assessment is done to correlate between plans and real impact of the project. Evaluation looks at what the project managers planned, their accomplishments so far and how they achieved them (Mulwa, 2007). This can be done at the early stages of the project life or at the end of the implementation.

Within the context of eHealth solution implementation projects, evaluations can assume various forms and be conducted during different phases of the project (International Labour Organization, 2015). Ideally, considerations for evaluation should begin during the project design stage and carry through to the post implementation stage. Depending on their timing, evaluations may be used to inform future phases of the project, for example, formative evaluations. Evaluations performed later in the project like summative evaluations may serve accountability purposes by examining and reporting specific outcome metrics and lessons learned to relevant stakeholders, such as, project funders and partners (Fleur, Binyam & Martin, 2015). The acronym METRIC—Measure Everything That Really Impacts Customers—can be used to help identify evaluation priorities (Osheroff, 2009). In the context of eHealth, the term “customers” refers to all stakeholders, including persons who are receiving care, health professionals, health care leaders, and health care organizations.

The literature supports the need for all e-Health solution implementation projects to be formally evaluated using a comprehensive evaluation framework (McGrath et al., 2008). Despite this, there is a paucity of evidence in this area. Multiple researchers have described the challenges associated with the evaluation of eHealth solution implementation projects and the problems resulting from studies not guided by a comprehensive evaluation framework. Nykänen and Kaipio (2016) analyzed the scope and quality of evaluation studies conducted within the last fifty years. They concluded that many of these studies had design flaws attributed to the evaluation methods employed. Given the complexity of the health care environment, the variety of users, uses and practice settings, the researchers emphasized the need for systematic approaches and guidelines to design and to carry out different kinds of evaluation studies to provide evidence about the impacts and actual efficiency, quality, usability and safety of health IT.

A study by Makori and Wanyoike (2015) conducted among donor funded value chain projects found that implementation, training and capacity on M&E were very important in performance of value chain. The study recommended building M&E capacities through training, regular reviews, adequate budgeting. Underfunding of intermediary agencies and consequent lack of professional capacity and high staff turnover affects result based M&E (Godfrey, 2002).



Khang and Moe (2008) found empirical evidence that effective consultations are far more important in influencing the project success. Strategy reviews have been shown to be critical control processes for continuous modification of strategy. Maitlis and Lawrence (2007) found that constant clarification and successive modification of the plan leads to a more acceptable plan and hence reduced negative behaviors.

Mumbua and Mingaine (2015) examined factors influencing implementation of strategic plans in the Machakos County Government and found that there is no proper alignment of resources with the strategic plans of the Council. The study recommended that alignment of resources should be done properly to utilize the skills acquired and make use of the human and physical capital available. Further, proper training and instruction should be given to the lower level employees to be competent in their area of work. Ouma (2016) study also found that making allowances for adequate monitoring and evaluation gives the project manager and field officials the ability to anticipate problems, to oversee corrective measures, and to ensure that no deficiencies are overlooked thus resulting in effective project implementation.

4.2 Agency Theory

The principal and agent theory emerged in the 1970s from the combined disciplines of economics and institutional theory. There is some contention as to who originated the theory, with theorists Stephen Ross and Barry Mitnick claiming its authorship. Agency theory, also known as the principal agent or principal agency theory/model describes the relationship between two or more parties, in which one party, designated as the principal, engages another party, designated as the agent, to perform some task on the behalf of the principal (Jensen & Meckling, 1976; Moe, 1984; Ross, 1973). The theory assumes that once principals delegate authority to agents, they often have problems controlling them, because agents' goals often differ from their own, and because agents often have better information about their capacity and activities than principals. Agency theory focuses on the ways principals try to mitigate this control problem by selecting certain types of agents and certain forms of monitoring their actions, and by economic incentives (Kiser, 1999). This theory is instrumental to the study from two perspectives. First, e-health implementers are part of an agency chain that involves system implementers, NGOs and state actors with the principals being international development partners and the citizenry. In the context of this study, however, the principal is taken as the donor organizations and the system implementers being the agents. Hence, the theory will be instrumental in analyzing the principal agent relationship between the implementers and the donors.

5. Research Methodology

5.1 Research Design

The study used descriptive survey research design. Since the study sought to obtain descriptive and self-reported information on how certain challenges affect service delivery in a particular devolved unit of government, the descriptive research design enabled the researcher to expose the respondents to a set of standardized questions to allow comparison (Orodho, 2004).

5.2 Target Population

The population of interest of this study comprised of the management of the ministry of health (MoH) both at the national and county government level, the management of public health facilities in Nakuru County, ICT staff at the ministries and hospitals and management and staff



of NGOs assisting in the implementation of e-Health in the area. Therefore, the study targeted 2 levels health ministries, 42 public health facilities and 7 NGOs (Department of Health Services-Nakuru County, 2016) bringing the total accessible population to 220 persons.

5.3 Sampling and Sampling Techniques

The study employed the formula proposed by Nassiuma (2000) to calculate the required sample size from the target population of 220, thus;

$$n = \frac{Nc^2}{c^2 + (N-1)e^2}$$

Where n = sample size, N = population size, c = coefficient of variation ($\leq 50\%$), and e = error margin ($\leq 3\%$). This formula enables the researchers to minimize the error and enhance stability of the estimates (Nassiuma, 2000). Substituting into the formula:

$$n = 220 \square$$

Thus, a sample size of 111 respondents obtained from the above formula. Stratified random was used to sample on ICT staff while using purposive sampling on the managers in order to obtain the required sample size. The main factor that was considered in determining sample size is the need to keep it manageable while being representative enough of the entire population under study. The use of the two sampling methods as opposed to other sampling designs was informed by the need for respondent specificity and the need for introducing randomness (Kothari, 2004).

5.4 Research Instrumentation

The study used primary data which basically involves creating “new” data (Kombo & Tromp, 2006). The data was based on the perceptions and attitude of the respondents towards the subject of interest to the present study. Therefore, given the nature of data to be collected, the scope of the study, time available and the nature of variables under investigation in the study, questionnaires were the most appropriate data collecting instruments. The study used a structured type questionnaire, containing only closed ended items.

5.5 Pilot Test, Validity and Reliability of the Research Instruments

This study used questionnaires after pilot testing them for correctness and accuracy on 15 non-participatory respondent sample. Piloting of the questionnaires was done in Kericho County which has similar demographic patterns. The results of the pilot test were used to assess the usability of the questionnaires for the study purposed. The study adopted content validity which to ascertain whether the test items represented the subject content that the study sought to investigate (Mugenda & Mugenda, 2003). As such, in order to ensure that all the items used in the questionnaires were consistent and valid, the instruments were subjected to scrutiny and review by the researcher’s supervisors at Kabarak University. The items were rephrased and modified where necessary to avoid ambiguity before being used for data collection.

The researcher used the internal consistency method to check the reliability of the research instruments. This was done by calculating the Cronbach’s alpha coefficient for all the sections of the questionnaire from the results of the pilot study. The study established a Cronbach Coefficient instrument reliability $\alpha = 0.891$ which was deemed admissible for the study. A value



of 0.7 or below of the Cronbach’s alpha coefficient is generally taken to show low internal consistency, hence, requiring rephrasing or deletion and replacement from the instrument (Cronbach & Azuma 1962).

5.6 Data Analysis Techniques and Presentations

Data was analyzed using both descriptive and inferential statistical methods. Descriptive analysis was done using means and standard deviations to describe the basic characteristics of the population. Inferential statistics involved the use of Pearson’s Product Moment correlation and linear regression model to determine the nature of the relationship between the variables with the linear regression model assumed to hold under the equation;

$$y_{ij} = b_0 + b_1 x_1 + \epsilon$$

Where;

y = Implementation of Donor Assisted E-Health Systems

b_0 = Model Constant

x_1 = Monitoring and Evaluation Strategy

b_1 , the coefficients of the variable to be determined by the model

e = the estimated error with zero mean and a constant variance

6 Results

6.1 Introduction

This chapter presents the data analysis results and discussions. Table 1 shows the response rates.

Table 1: Response Rate

Instruments issued	Instruments returned	Percentage response (%)
111	79	71

One hundred and eleven questionnaires were administered to the respondents and seventy-nine were returned duly filled and useable for the study purposed. This represented 71% response rate and acceptable for the study. According to Mugenda and Mugenda (2003), a response rate of over 50% is considered acceptable.

6.2 Monitoring and Evaluation and Implementation of E-Health Systems

The objective of the study was to assess the influence of Monitoring and Evaluation strategy on implementation of donor assisted e-health management systems in public health facilities in Nakuru County. The results are summarized in Table 2.



Table 2: Monitoring and Evaluation Strategy and Implementation of E-Health Systems

Statement	SA Freq(%))	A Freq(%))	N Freq(%))	D Freq(%))	SD Freq(%))	χ^2	p- value
We often seek to incorporate M&E agencies at the beginning of a project to ensure they are conversant with our systems	25(32)	40(51)	10(13)	2(3)	2(3)	99.48	0.000
We always require that M&E organizations contracted by our organization are conversant with the implementation policies	27(34)	42(53)	7(9)	2(3)	1(1)	88.56	0.000
We have internally scheduled systems reviews	21(27)	45(57)	8(10)	5(6)	0	58.4	0.000
We have our own internal M&E team which we often require to work with the external M&E agencies	21(27)	46(58)	7(9)	3(4)	2(3)	87.12	0.000
We have a well-defined scope of work for M&E both internal and external	26(33)	39(49)	12(15)	2(3)	0	68.75	0.000
We have a specific template for M&E reporting	24(30)	42(53)	10(13)	3(4)	0	63.69	0.000
We always adopt the reports after making our own strategic review of the report	28(35)	30(38)	14(18)	6(8)	1(1)	149.49	0.000

The findings in Table 2 suggest that most e-health management system implementing agencies in the area always sought to incorporate M&E agencies at the beginning of a project to ensure they are conversant with their systems (51%). They also required that M&E organizations they contracted be conversant with the implementation policies (53%). Most had internally scheduled systems reviews (57%). In addition, they had their own internal M&E team which they often required to work with the external M&E agencies (58%). Other findings suggest that most implementing agencies had well-defined scope of work for both internal and external M&E evaluators (49%). Most also had specific templates for M&E reporting (53%). The agencies always adopted the M&E reports after making their own strategic review of the report (38%). It can be deduced from the foregoing findings that the underlying strategic concepts used by the agencies for M&E were involvement and strategic direction setting (Cespedes & Piercy, 2010). These were achieved by first ensuring that all M&E organizations were involved at an earlier



stage to enable them track developments and advise accordingly to enable the implementers to conveniently accommodate vital changes (Fleur et al., 2015). Second the adoption of the reports after strategic review was an important approach to strategic direction setting (McGrath et al., 2008).

6.3 Implementation Status of Donor Assisted E-Health Systems

The study also sought to determine the implementation status of donor assisted e-health management systems in public health facilities in Nakuru County.

Table 3: Implementation Status of Donor Assisted E-Health Management Systems

Statement	SA	A	N	D	SD
	Freq(%))	Freq(%))	Freq(%))	Freq(%))	Freq(%))
The adoption rates for the e-health system are increasing in the county	9(11)	21(24)	24(30)	16(20)	12(15)
Our projects implementation costs rarely go beyond what has been budgeted for	15(18)	40(51)	15(19)	5(6)	4(5)
We are able to make maximum use of the resources at our disposal when implementing e-Health	21(27)	41(52)	9(11)	6(8)	2(3)
The system is proving reliable in to both implementers and users	21(27)	42(53)	13(16)	2(3)	1(1)
We have been able to reduce challenges associated with system downtime	20(25)	43(54)	11(14)	4(5)	1(1)
The implementation of the system has improved its accessibility to all intended users	28(35)	37(45)	10(13)	1(1)	3(4)
We have been able to achieve our performance targets	25(32)	32(41)	11(14)	9(11)	2(3)
We still experience several constraints which limit our operations	22(28)	34(43)	7(9)	9(11)	7(9)

The results in Table 3 suggest that there was considerable uncertainty regarding the adoption rates for the e-health system are increasing in the county (30%). The findings, however, indicate that the projects implementation costs rarely went beyond what has been budgeted for by the implementers (51%). The implementers were also able to make maximum use of the resources at their disposal when implementing e-Health (52%). Most respondents were also of the view that the system was proving reliable to both implementers and users (53%) as they had been able to reduce challenges associated with system downtime (54%). Moreover, the implementation of the system had improved its accessibility to all intended users (45%). Other findings also indicate that most system implementers had been able to achieve their performance targets (41%), though, most still experienced several constraints limiting their operations (43%). The findings suggest that universal implementation of e-health management systems had not been attained. This is consistent with the report by the National e-Health Policy (2016) that recognized marked



disparities in e-Health adoption across geographical and administrative boundaries. Earlier studies in the country by Mulwa (2013) and Chebole (2015) had also indicated that the implementation of the e-health systems were moving slowly than expected. The findings also imply that the system challenges were inherent on the system design and configuration as opposed to the implementation approaches. They confirm the successes in the implementation of the e-health management system was primarily a result of the resource-based view where the project implementers tended to maximize on resources and opportunities available to achieve their objectives (Ireland, Hitt&Hoskisson, 2008).

6.4 Regression Analysis

Bivariate regression analysis was used to determine the regression model postulated in chapter three held and actually represented what was happening on the ground. The results are given in Table 4

Table 4: Multiple Linear Regression Analysis Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.478 ^a	0.229	0.219	4.39940

a. Predictors: (Constant), M&E Strategy

b. Dependent Variable: E-Health Implementation

The linear regression analysis results in Table 4 shows that the relationship between the dependent variable and the independent variable had a model correlation coefficient $R = 0.478$ which was higher than any zero order value in the table. The results in Table 4 also suggests that the model could explain up to 22.9% of the variations in the implementation variable. This indicates that the model could improve when more variables are incorporated when trying to analyze the strategies used in implementing donor assisted e-health management systems in Nakuru County. It was also salutary to carry out an ANOVA to validate the findings in Table 5. The results of the ANOVA are summarized in Table 4.9.

Table 5: Depended variable: Implementation (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	442.292	1	442.292	22.852	.000 ^b
Residual	1490.315	77	19.355		
Total	1932.608	78			

a. Dependent Variable: E-Health Implementation

b. Predictors: (Constant), M&E Strategy

The results of Table 5 indicate that there is a significant difference between means of the M&E variable and the variable describing the implementation status of donor assisted e-health management systems in Nakuru County ($F_o = 22.852 > F_c = 3.96$; $\alpha < 0.05$; $df = 1, 77$; $p < 0.05$). This finding confirms that the model predicted by Table 4 and shows that it is indeed significant. Further, the beta value was used to determine the model linking the M&E strategy to e-health implementation as shown in Table 6.



Table 6 : Multiple linear regression results

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	7.608	4.997		1.522	.132
M&E Strategy	.728	.152	.478	4.780	.000

a. Dependent Variable: E-Health Implementation

It can be deduced from the findings in Table 6 that Monitoring and Evaluation Strategy ($\beta = 0.478$, $p < 0.05$) significantly influenced implementation of donor assisted e-health management systems in Nakuru County as per the model and that could be predicted by the linear relationship;

$$Y = 7.608 + 0.728 \text{ Monitoring and Evaluation Strategy (MES)}.$$

Therefore, with regard to the null hypothesis;

H₀₁: *Monitoring and Evaluation strategy does not significantly influence implementation of donor assisted e-health management systems in public health facilities in Nakuru County.*

It is evident from the beta values in Table 6, that there was a significant relationship ($\beta = 0.478$, $p < 0.05$) between the two variables and, therefore, we fail to accept the null hypothesis and adopt the view that Monitoring and Evaluation strategy significantly influenced implementation of donor assisted e-health management systems in public health facilities in Nakuru County. These findings support those of Nykänen and Kaipio (2016) who found that the success of the implementation of healthcare projects which are generally complex in nature were dependent on the evaluation methods employed. The findings also concur with Makori and Wanyoike (2015) who found that implementation, training and capacity on M&E were very important in performance of donor assisted projects. Khang and Moe (2008) had also earlier on found empirical evidence that effective M&E consultations were far more important in influencing the project success.

7. Recommendations and Areas for further study

In the light of the preceding findings, the study therefore recommends that there is need for the implementing organizations to ensure that in addition to the M&E evaluations, quality evaluation and reporting should be made available to all pertinent stakeholders so as be able to raise the quality standards of the system after implementation and, thereby, increase the levels of confidence in the system.

Regarding future studies in this area, the study recommends that more research should be done on the influence of employee development strategies on e-health implementation programs. Studies should also be done on resource management strategies adopted for e-health implementation.

8. Conclusions



The findings revealed that most e-health management system implementing agencies in the area always sought to incorporate M&E agencies at the beginning of a project to ensure they were fully conversant with their systems. Moreover, they also required that M&E organizations contracted be conversant with the implementation policies. The findings also revealed that most implementing agencies had adopted internally scheduled systems reviews and, in addition, they had their own internal M&E teams which they often required to work with the external M&E agencies. They also had well-defined scope of work for both internal and external M&E evaluators and had specific templates for M&E reporting. The M&E reports were often adopted depending on the agencies making their own strategic review of the report. Monitoring and Evaluation strategy was also found to have a strong correlation with the implementation of donor assisted e-health management systems in public health facilities in Nakuru County. Additionally, the study established that M&E strategy had a statistically significant influence on the implementation of the e-health management systems in the regression model. Therefore, the study concludes that monitoring and evaluation strategy was very important to the implementation of donor assisted e-health management systems in public health facilities in the study area. This approach ensured objectivity in the implementation process as well as providing strategic direction to the implementers. The study contributes to the growing research on e-Health implementation by providing a strategic management dimension. In this aspect M&E serves as variable for strategic review process which is an important component of strategy implementation. Theoretically, the study underscores the importance of M&E in mitigating the agency problem in donor-funded organizations. Consistent with the agency theory, the findings show that the agency problem in organizations especially the alignment of objectives and resources can be reduced when M&E is regularly done in the organizations both internally and through external agents.

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