



# EXAMINING MANAGEMENT INFORMATION SYSTEMS IN HEALTHCARE ADMINISTRATION AT THE SUNYANI WEST DISTRICT OF GHANA

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## KeyWords

Management Information System, ehealth, healthcare, health facilities, administration, application, ICT, MIS, HMIS

## ABSTRACT

The study aimed at examining management information systems (MIS) in health care administration at the Sunyani West District. The main health facilities studied were Nsuatre Health Center, Chiraa Health Center and the Kwatire Polyclinic. A mixed method research design was used for this study. Participants from the chosen health facilities were selected using the stratified sampling technique for staff and purposive sampling for the management. The main instruments for data collection included in-depth interviews for management and questionnaire for staff. Data collected were analyzed with the use of correlation analysis, descriptive statistics and thematic analysis. The study established a strong positive correlation between factors influencing the adoption of MIS which are leadership, usability, organisational structural change, training and technical support and technology. It was also established that health facilities in the Sunyani district used the MIS applications for internal communications, sending and receiving email messages for official work, monitoring computers and tracking devices for staff registration, and for maintenance of staff attendance. The study also exposed some challenges such as persistent power outages, network problems and limited computer skills by the users. Remedial measures adopted include back-up power system or standby generators and system upgrade. The study recommends that management puts in place incident reporting and response mechanisms, to ensure continuous monitoring and evaluation of the system in order to ensure all users adhere to set standards.

## 1.0 Introduction

Advancements in technology have resulted in rapid changes in modern management in both public and private institutions. Administrative activities in times past used to be mostly paper-based. The changes have been necessitated by advancement in Information and Communication Technologies (ICT). The complexity of technological changes has led to far-reaching developments in managerial systems, especially on management tasks at individual and institutional levels [1].

Administration is a process of systematically arranging and coordinating the human and material resources available to any organisation for the main purpose of achieving stipulated goals of that organisation. Administration occurs in every organisation whether it is done manually or electronically. The basic aim of administration is the need to get things done for defined objectives to be accomplished. It is principally responsible for the execution or implementation of plans, programmes and policies. Administration, also involves such elements as planning, organising, programming, staffing, budgeting, coordinating, reporting and evaluating [2]. Hospital administration covers a large number of activities including planning of the hospital system as a whole, regulation for the operation of the hospital, and daily running of the hospital by administrative staff concerned with personnel, finance accounts and technical services.

Management Information System (MIS) is basically concerned with the process of collecting, processing, storing and transmitting relevant information to support management operations in any organisation [3]. MIS is any system that provides information for management activities carried out within an organisation. The information is selected and presented in a form suitable for managerial decision making and for the planning and monitoring of the organisation's activities. MIS is one of the most important tools in any organisation in recent times, which aims to provide reliable, complete, accessible, and understandable information in a timely manner to the users of the system [4]. Automation can save time, money, resources, reduce employee's staff, and enhance organisational

workflow. In addition, it assists in increasing organisational productivity, effectiveness, increase customer satisfaction, and efficiency of the work.

Countries, notwithstanding their different political ideologies or leadership, wealth or health-insurance systems, face similar challenges in their bid to integrate eHealth with the general health administrative set-up. These include but not limited to “funding, government/private sector co-operation, stakeholder engagement or integration of local perspectives, workable approaches to interoperability, documented best practices, affordable open-source options as well as privacy and security issues [5]. The meager uptake of technology in the health sector could be attributable to lack of a Health Management Information System (HMIS) Strategic Plan, Policy and Legal framework for health data reporting.

## 2.0 Problem Statement

For the past few years, MIS has become an integral part of the core activities in the health centers in the Sunyani West District in the Bono Region. This has been as a result of management decision to adopt and utilize ICT in the administrative activities of the hospitals. To reduce the manual workload of the administrative activities, hospitals began to electronically automate many of these processes. Since the introduction of the system, technical and interpersonal activities are expected to be effectively managed to achieve the desired objectives of the hospital. The system requires various departments such as human resource, finance, operations and others to carry out their activities within the system. Typically, the system mandates workers to clock in before and after work to check the movement of all staff. The system provides reminders to management and staff on all activities to be performed and other notices.

MIS has been shown to have notable benefits for most organizations including cost saving capabilities. However, when implemented in practice MIS systems consistently fail to produce desired results. The World Health Organization (2006) identified a number of obstacles that impede the smooth adaptation and implementation of electronic health records in most developing countries. Among the many obstacles are available technology, technical support and the cost of changing to an electronic system coupled with insufficient healthcare funding. In many developing countries, costs, available technology, lack of technical expertise and computer skills of staff, and lack of data processing facilities are very common obstacles [6]. It is equally imperative that implementing a new technology (such as MIS), especially in complex work environments such as in the health sector requires a careful thought out plan and strategy to address the challenges. Additionally, the factors that inhibit the smooth implementation of MIS in different health-care settings in the sub-region have not been widely studied despite the the essential role it plays.

An important aspect of using information systems is user satisfaction. It is often suggested as an indicator of IS success. Many IS empirical researchers have regarded user satisfaction as important determinant of MIS success [7]. Although satisfaction will indeed lead to system use, elements of satisfaction that promote system use need to be considered in order to prove that a relationship exists between satisfaction and technology use [8]. Satisfaction with the system can be assessed through an understanding of how the technology meets end-user expectations, facilitates the ability of the end-user to meet goals, and provides high quality supports [9]. It is further argued that in administration and management, the ability of the system to facilitate the use of staff competencies is also essential for achieving satisfaction [10]. If the system can meet these requirements, the end user should express considerable satisfaction with the system, prompting its use and integration into the workplace [8]. Given these issues, the current investigation sought to examine MIS in health centres at the Sunyani West district of Ghana following its implementation in recent times.

## 2.0 Purpose Of The Study

1. Examine factors influencing the adoption of MIS in the administration of Health Centers in the Sunyani West District.
2. Examine the benefits associated with the utilization of MIS in the management of Health Centers in the Sunyani West District.
3. Identify challenges management and staff face in using MIS in the health administration in the Sunyani West District.
4. Examine efforts being made to address the identified challenges in Sunyani West District.

## 4.0 Research Questions

1. What factors influence the adoption of MIS in the administration of Health Centers in the Sunyani West District?
2. What benefits are associated with the utilization of MIS in the management of Health Centers in the Sunyani West District?
3. What challenges do management and staff face in using MIS in health administration in the Sunyani West District?
4. What efforts are being made to address the identified challenges in Sunyani West District?

## 5.0 Literature Review

Management information system is kind of organizational information computer systems, that take internal information from operating processing system and summaries them to meaningful and useful forms as management reports to use in performing management duties [11][12][13]. A Management Information System is an information system that evaluates, analyzes, and

processes an organization's data to produce meaningful and useful information based on which the management can take right decisions to ensure future growth of the organization [14][15][16]. The benefits of MIS include to provide a comprehensive array of information through a single database; to enable organizations have structural connectivity between centers and activities to accelerate information transactions; to increase competitiveness by improving operational and administrative processes characteristic of human resources; to collect relevant data and turn it into information and theoretical knowledge to improve the quality and increase the speed of decision making; to provide a more comprehensive and varied human resource reports accurate and in real time; to stream and increase the efficiency and reliability of human resource functions of an administrative; to change the accent within human resources from the processing of transactions on the strategic management of human resources; to re-upgrade the processes and HR functions; to improve the level of customer satisfaction by providing human resources services in a prompt and accurate manner[17].

The factors that are responsible for success or failure of MIS implementation are usability, leadership, technology, organizational structural change, and training and technical support [18]. Key barriers in the implementation of MIS include firstly, an unclear information framework [19]. This may have more of an impact on low and middle-income countries (LMICs), leading to errors in population health management and clinical care [20]. Second barrier has to do with organisational factors. These constitute the main barriers in the implementation process, and include ineffective reporting, as well as lack of staff training and management issues [21][22][23]. Lack, or misuse, of resources is also an issue [22][19][24][25][26]. Lack of attention to issues of organisational structure was a major pitfall in HMIS development in Botswana [27]. Third is that implementing electronic health record systems can be an expensive process in high-income settings. In low-income settings, such as Kenya, open source software may offer some respite from the high costs of software licensing [28]. Moreover, hierarchical organisational structures hindered decision making in Morocco, particularly with senior officials [23]. However, despite challenges, multi-stakeholder committees in the provinces and municipalities of Afghanistan proved to be an invaluable entry-point to the governance of the provincial and municipal health systems [25]. Furthermore, community workers or staff with poor language skills can hinder the data aggregation process. Discrepancies occur in the collection and data entry processes [22]. This affects the decision making stage which can also be affected by lack of funds [25]. Also, the main obstacles to data quality and data use include conceptual technical, organizational or political, behavioural, economic, legal, ethical, and capacity building barriers [20]. Again, staff, such as health managers, can be overburdened by requirements to produce multiple reports demanded by vertical programmes, besides the national HMIS [22].

## 6.0 Research Method

The mixed methods approach was used for this study. Mixed method approaches answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach [29]. The purpose of using the mixed method design was to use both responses obtained from the questionnaire and those from the interviews to provide a comprehensive analysis of the research questions asked.

The target population for this study comprised of all healthcare workers in the selected health centers in the Sunayani West District namely Nsuatre Health Center, Chiraa Health Center and Kwatire Polyclinic. Data from the Human Resource Departments of the selected Health Centers indicated total staff strength of 220; 74 from Nsuatre Health Center, 96 from Chiraa Health Center and 50 from Kwatire Polyclinic. This consisted of permanent and casual workers in the selected health centers in the Sunyani West District.

For the first stage of the sampling process, the Nsuatre Health Center, Chiraa Health Center and the Kwatire Polyclinic were purposively chosen as the study cases out of the 27 health centers in the Sunyani West District. The hospital workers were then stratified into the different departments according to their operations. This was because that provided equal chances to every stratum in the accessible population. The entire population was first divided into subpopulations and then samples taken randomly within the strata so as to achieve a representation from every department [30]. Mugenda and Mugenda (2013) support that 25-30% of the total population is enough to act as representative sample in a case study [9].

Table 1: Distribution of Sample

Category of staff	Population	Sample
Nurse/Midwife background	80	20
Physician/Medical background	25	5
Pharmacist/Dispensary	15	4
Laboratory/clinical	15	4
Administrators/clerks	25	5
Support staff	40	12
Management	20	5
<b>Total</b>	<b>220</b>	<b>55</b>

Purposive sampling technique was employed in the selection of the management staff of the hospitals. The main instruments for this study included key interviews for management and questionnaire survey for staff of the hospital. Prior to applying the data collection tools, the researcher sought permission from the ethics and research committees, and the management of the hospitals to

carry out the research. Both instruments were self-administered by the researcher with the help of the unit in-charges.

Quantitative data was analysed by the use of Statistical Package for Social Scientists (IBM-SPSS v.20). The qualitative data was analysed using thematic analysis in relation with the study objectives. Both the quantitative and qualitative data were presented using tables, figures and texts respectively.

## 7.0 Presentation of Results

A response rate of 90.9% formed the basis for the data analysis. Results are presented in tables and charts. Interview with management helped to put the results in perspective.

### 7.1 Biographic Information of Respondents

The age group with the highest percentage (42%) was 26-35 years. This was followed by those within the age group of 36-45 with percentage score of 26%. Twenty-two percent of the respondents were below the age of 25 years. The rest of the respondents 6% and 4% were in the age brackets 46-55 years and above 56 years respectively.

**Table 1: Gender of Respondents**

Gender	Frequency	Percent
Male	19	38.0
Female	31	62.0
Total	50	100.0

Responses indicated that all the participants have tertiary education ranging from diploma to post graduate certificates from tertiary institutions. Half of the respondents are first degree holders from different course areas. Those with Diploma certificates constitute 22% of the respondents interviewed. 18% of the respondents have post graduate certificates (Masters) and one-tenth also hold specialized certificates who are mainly Medical Doctors.

30% of the respondents representing the majority have length of service with the hospital between 4-6 years. While 24% of the respondents have work experience between 1 to 3 years, 22% have between 7 to 10 years work experience at the hospital. Those with the highest number of years working in the hospital (more than 10 years) constitute 16%. Less than one-tenth of the respondents representing 8% have the least number of years in the hospital, thus, below a year.

A greater percentage of the respondents (30%) were nurses and midwives, 22% of respondents were record officers, 16% of respondents were Clinicians, 10% of respondents were Administrative Staff, 8% each were Laboratory staff, and Pharmacy staff. The least were IT staff that constituted 6% of respondents.

### 7.2 Factors influencing the adoption of MIS

Five major factors based on literature reviewed that influence MIS adoption were measured. These factors include leadership, usability, technology, training and technical support, and organisational structural change. Table 3 shows correlations between factors influencing the adoption of MIS.

**Table 2: Correlations between Factors Influencing the adoption of MIS**  
**Correlations**

		PUsa- bility	Leader- ship	Change	Train- ing ward	Tech- nology
Usability	Pearson Correlation	1	.886**	.633**	.354	.354
	Sig. (2-tailed)		.000	.005	.149	.149
	N	18	18	18	18	18
Leader- ship	Pearson Correlation	.886**	1	.751**	.338	.338
	Sig. (2-tailed)	.000		.000	.170	.170
	N	18	18	18	18	18
Structural change	Pearson Correlation	.633**	.751**	1	.823**	.823**
	Sig. (2-tailed)	.005	.000		.000	.000
	N	18	18	18	18	18
Training & Technical	Pearson Correlation	.354	.338	.823**	1	.338
	Sig. (2-tailed)	.149	.170	.000		.170
	N	18	18	18	18	18
Technolo-	Pearson Correlation	.886	.338	.823**	1	.338

gy	Sig. (2-tailed)	.000	.170	.000		.170
	N	18	18	18	18	18

\*\* . Correlation is significant at the 0.01 level (2-tailed).  
Source: Field survey, (2019)

Pearson Correlation coefficient, significant values and number of respondents with non -missing values is shown in Table 3 the value of Pearson correlation coefficient for usability, leadership and technology is 0.886 which incline towards +1 and shows a strong positive relation between them. This indicates that the positive change in one leads to positive change in other variable. The significance value of p is .000 which is less than 0.01, shows the correlation between the factors of MIS adoption and the hospital administration, thus, showing a positive at 95% level of significance. The finding shows that, there was a positive and high relationship between the factors of MIS adoption and the hospital administration regarding organizational structural change with ( $r = 0.633$ ), and training and technical support with ( $r = 0.354$ ).

### 7.2.1 Usability Related Factors

The usability construct was constituted by three statements, namely, usability of the technology, the system is up-to-date and the technology being self-solving when error occurs. Respondents indicate their level of agreement with the statements, ranging from very high influence (5), high influence (4), moderate influence (3), low influence (2) and no influence (1). The results as shown in Table 4 indicate that 2 out of the 3 statements showed a high influence of the usability related factors. Respondents indicated that the usability of the technology (3.913) and the system being up-to-date (3.800) highly influenced management decision to deploy the technology in the hospital administration. On the other hand, the technology is self-solving when an error occurs, scored mean of 2.545 indicating moderate influence on management decision.

**Table 3: Descriptive Statistics for Usability related Factors**

Independent Variables	Mean	Std. Dev.
There is usability of the technology	3.913	0.793
The MIS system is up-to-date	3.800	1.080
The technology is self-solving when an error occurs	2.545	.978

Source: Field survey, (2019)

### 7.2.2 Technology Related Factors

Table 5 shows that all the statements highly influenced management decision to adopt the technology in the hospital. For example, the availability of IT tools such as hardware and software equipment had a mean score of 4.040, the facility having appropriate technology and infrastructure in place (3.800) and the provision of adequate security for data with mean score 3.708.

**Table 4: Technology related Factors**

Independent Variables	Mean	Std. Dev.
Availability of IT tools such as hardware and software equipment	4.040	.978
Appropriate technology and infrastructure in place	3.800	.957
Provision of adequate security for data	3.708	.908

Source: Field survey, (2019)

### 7.2.3 Training and Technical Support Related Functions

Table 6 shows that statements such as regular training of staff about the system and how to use it (3.920) and IT department to oversee the management of the MIS technology (4.217) indicated high influence on management decision to deploy MIS in the hospital administration. On the other hand, statements including access to parts or accessories for technical support (3.208) and constant flow of power to enable it usage (2.545) indicate a moderate influence on management decision to deploy the technology in

the hospital administration.

**Table 5: Training and Technical Support related factors**

<b>Independent Variables</b>	<b>Mean</b>	<b>Std. Dev.</b>
There is access to parts or accessories for technical support	3.208	1.021
There is constant flow of power to enable it usage	2.545	.962
There is regular training of staff about the system and how to use it	3.920	.812
There is IT department to oversee the management of the MIS technology	4.217	.422

Source: Field survey, (2019)

#### 7.2.4 Organisational Structural Change Related Factors

Table 7 shows that all the statements relating to organization structural change high influenced management decision to deploy the technology as all the mean scores showed 4. Specifically, goals of the system are clearly defined and understood by all staff (4.120), the organization's culture, individual staff are encouraged to use IT (4.080), office work set up to ensure its deployment (4.042) and the organizational setting supports change (4.00).

**Table 6: Organizational Structural Change related factors**

<b>Independent Variables</b>	<b>Mean</b>	<b>Std. Dev.</b>
As part of the organization's culture, individual staff are encouraged to use IT	4.083	.408
Goals of the system are clearly defined and understood by all staff	4.120	.727
Office work set up to ensure its deployment	4.042	.690
The organizational setting supports change	4.00	.659

Source: Field survey, (2019)

#### 7.2.5 Leadership Related Factors

Table 8 shows that leadership related factors highly influenced management decision to deploy the MIS technology into the hospital administration. Using a range from very high influence (5), high influence (4), moderate influence (3), low influence (2) and no influence (1); respondents said that there is an IT specialist particularly for the MIS set up (4.250), staff and management support for the deployment and utilization of the tools (4.000), cost and benefits of the technology usage are well understood by management (3.826) and IT specialist has a high level of experience (3.640).

**Table 7: Leadership related factors**

<b>Independent Variables</b>	<b>Mean</b>	<b>Std. Dev.</b>
There is an IT specialist particularly for the MIS set up	4.250	.676
Both staff and management support for the deployment and utilization of the tools	4.000	.419
Cost and benefits of the technology usage are well understood by management	3.826	.984
IT specialist has a high level of experience	3.640	.960

Source: Field survey, (2019)

### 7.3 Benefits associated with the utilization of MIS in the Hospital administration

This objective sought to understand from the staff and management how the technology has facilitated health care delivery and services in the hospital. Table 8 depicts the respondents' best description of the system they are operating with. Most of the respondents (46.7%) said the system is accessible. 20% said it is accurate. Reducing errors came next as 17.8% of the respondents mentioned that as a feature. Others, 11.1% said the system is efficient while 4.4% said the technology is reliable.

Table 9 shows responses on whether the incorporation of the technology makes the discharge of their duties easier and faster. The results indicate that 44.4% of the respondents to a large extent accept it has made their work faster and easier. While 28.9% of the respondents said to some extent, 15.6% also said to a very large extent, it has made them discharge their duties easier and faster. 11.1% said to a very small extent, the system has enabled them discharge their duties faster and easier.

**Table 9: Best description of the technology from results produced**

Attributes	No	Percent
Accessible	21	46.7
Efficient	5	11.1
Reduction in errors	8	17.8
Accurate	9	20.0
Reliable	2	4.4
Total	45	100

Source: Field survey, (2019)

**Table 10: Extent to which MIS makes work easier and faster**

Responses	No	Percent
A very large extent	10	15.6
A large extent	20	44.4
Some extent	13	28.9
A very small extent	7	11.1
Not at all	0	0.0
Total	50	100

Source: Field survey, (2019)

#### 7.3.1 Benefits of MIS to Users

Table 11 shows various benefits both management and staff have derived from the MIS deployment in the hospital administration. Staff generally affirmed the statement that MIS has changed the nature of administration in the hospital by allowing information to be transferred, stored, retrieved, and processed by all; MIS technology has changed staff attitudes towards work; MIS has created an environment for group communication that allows the users to access and share knowledge; and the MIS technology has reduced delays in communicating and dissemination of vital information in the hospitals. Similarly, others expressed their satisfaction with use of the technology as they agreed to the statements that MIS helps monitor the progress of planning activities that and staff hurdles in the use of manual systems have been cleared by the new technology. On the other hand, some staff members were not certain whether the MIS helps ensure effective interaction or interface of all units such as drugs, lab, etc. and that there is open access to minutes of meetings/agendas via an intranet and other social media platforms. However, some staff disagreed that the deployment of MIS ensures information runs smoothly at all levels of the hospital. The results indicate that staff satisfaction with the deployment of the MIS applications is as a result of the numerous benefits they have derived from the technology in administrative duties.

**Table 11: Benefits to users with the use of the MIS technology**

Independent Variables	Mean	Std. Dev.
MIS technology has changed staff attitudes towards work	5.0000	.0000
The MIS helps monitor the progress of planning activities	4.1379	.44111
MIS helps ensure effective interaction or interface of all units such as drugs, lab etc.	3.0931	.77364

The use of the MIS technology has reduced delays in communicating and dissemination of vital information in the hospital	4.9310	.25788
Staff hurdles in the use of manual system have been cleared by the new technology	4.0793	1.01467
It creates an environment for group communication that allows the users to access and share knowledge	4.9655	.18570
The deployment of MIS ensures information” runs smoothly at all levels of the hospital	1.7778	.42779
There is open access to minutes of meetings/agendas via an intranet and other social media platforms	3.0931	.77364
MIS has changed the nature of administration in the hospital by allowing information to be transferred, stored, retrieved, and processed by almost all	5.0000	.0000

Source: Field survey, (2019) [SA=5, A=4, U=3, D=2, SD=1]

### 7.3.2 Effects of MIS on staff behaviour

Table 12 shows that all the staff strongly agree that the deployment of the MIS applications have helped monitor staff punctuality, helped management check on staff lateness, helped improved staff performance through regular attendances and helped staff improve their work ethical behavior.

**Table 128: Effects of the MIS technology on Staff behavior**

Independent Variables	Mean	Std. Dev.
MIS technology has helped get accurate time of attendance	5.0000	.0000
The MIS helps monitor staff punctuality	5.0000	.0000
MIS helps management check on lateness of staff	5.0000	.0000
Improved staff performance through regular attendance	4.9655	.18570
Help staff improved their work ethical behaviour	4.9310	.25788

Source: Field survey, (2019) [SA=5, A=4, U=3, D=2, SD=1]

### 7.4 Challenges management and staff face in using the MIS in the Hospital administration

Table 13 shows the various challenges inherent in the system and affecting the effective utilization of the system. Multiple responses were generated during the data collection process. The results indicated that all the respondents indicated frequent power cut is the main challenge they are confronted with. There is also an issue of log in challenges as well as persistent network problem experienced by the system. A few also mentioned limited computer skills by the users and the lack of technical know-how.

**Table 9: System Inherent Challenges**

Challenges	No	Percent
Frequent Power outages	50	100.0
Persistent network problem	26	42.0
Lack of technical know-how of users	10	20.0
Accessibility issues (log in)	41	82.0
Limited computer skills by users	10	20.0
Total	50	100

Source: Field survey, 2019



### 7.5 Efforts to address the inherent challenges to improve the MIS system

Table 14 shows that majority of the respondents (62%) said management has procured a standby generator to solve the power cut challenges. One-fifth of the respondents mentioned the need for update of the system to address the log in problems experienced in the system. Others, 8% mentioned the purchase of IT logistics and accessories to boost the system in order that it functions effectively and efficiently. While 6% of the respondents said regular upgrade of personnel through in-service training, 4% mentioned management buying high speed internet connectivity to address network issues.

**Table 104: Measures to address the inherent challenges**

Measures	No	Percent
Procurement of standby generator	31	62.0
Procurement high speed internet connectivity	2	4.0
Training of personnel	3	6.0
Consistent update of the system to address log in challenges	10	20.0
Procurement of other IT logistics (software programmes, accessories)	4	8.0
Total	50	100

Source: Field survey, (2019)

## 8.0 Discussion of Results

### 8.1 Reasons behind the adoption of MIS in the administration of the Hospitals

In this objective, five items were measured including usability, leadership, technology, training and technical support, and organizational structural change. The study revealed that there is a positive relation between the five factors that influenced management to adopt MIS applications in administrative activities of the health centers. The results for usability, leadership and technology are 0.886 which incline towards +1 and shows a strong positive relation between them. Again, there was a positive and high relationship between the factors of MIS adoption and the hospitals administration regarding organizational structural change and training and technical support. Information and computer technology (ICT) can strengthen HMIS implementation as this has been also observed in some studies in Low and Middle Income Countries (LMICs), including Ghana. [19].

### 8.2 Benefits associated with the utilization of MIS in the administration of the hospitals

There were various benefits both management and staff have derived from the MIS deployment in the hospital administration. Staff generally affirmed that MIS has changed the nature of administration in the area by allowing information to be transferred, stored, retrieved, and processed by almost all; MIS has changed staff attitudes towards work; MIS has also created an environment for group communication that allows the users to access and share knowledge; and the MIS technology has reduced delays in communicating and dissemination of vital information in the hospital. Similarly, others expressed their satisfaction with use of the technology as they agreed that MIS helps monitor the progress of planned activities. Staff hurdles in the use of manual system have also been cleared by the new technology. Some staff were not sure whether the MIS helps ensure effective interaction or interface of all departments such as drugs, lab etc. and that there is open access to minutes of meetings and agenda via an intranet and other social media platforms.

Others did not completely agree with the fact that the deployment of MIS ensures that information runs smoothly at all levels. It was also proven that staff satisfaction with the deployment of the MIS applications is as a result of the numerous benefits they have derived from the technology in administrative duties. These benefits confirm what Meryo and Boit (2012) said as it has improved efficiency in day-to-day operational activities especially in managing information about management, staff and resources [32].

Other benefits are seen in the area of changing staff attitudes toward work generally as all the staff strongly agreed that the deployment of the MIS applications have helped monitor staff punctuality; MIS applications helped management check on staff lateness; helped improved staff performance through regular attendance and helped staff improve their general work ethical behavior.

### 8.3 Challenges management and staff face in using the MIS in the hospitals' administration

All the respondents confirmed that frequent power cut is the main challenge they are confronted with. There is also an issue of log in challenges where they are unable to log in due to very poor network services. Another challenge is limited computer skills by the users and the lack of technical know-how from the users. Organisational factors included lack of a clear vision for change management; ineffective reporting structure; rapid staff turnover; low staff competency; lack of full support from higher management; confusion on roles and responsibilities; inadequate resources; failure to benchmark existing practices, and inability to measure success [23]; as well as lack of staff training and management issues [21][22].

#### 8.4 Efforts management and administrators have to put in place to address the inherent challenges to improve the system

Results indicated that management has procured a standby generator to solve the power cut challenges. Some also mentioned the need for update of the system to address the log in problems experienced in the system [33]. Others mentioned the purchase of IT logistics and accessories to boost the system in order to function effectively and efficiently. While few of the respondents said regular update of personnel through in-service training, and management subscribing to high speed internet connectivity to address network issues.

#### Conclusion

The study has revealed a positive relationship between the five factors that influenced management to adopt MIS applications in the administration of the health centers. What is significant is the changing staff attitudes toward work generally as the deployment of the MIS applications have helped monitor staff punctuality, MIS applications helped management check on staff lateness, improved staff performance through regular attendance and helped staff improve their work ethical behavior. However, the realization of the full benefits from the technology is being hampered due to frequent power cuts; log in problems, system always down due to network problems, limited computer skills by some users.

In conclusion, some strategies need to be put in place as revealed by the study including reliable power, back-up system and system upgrade to improve healthcare delivery to the people and overall service delivery. To address the limitations of this study particularly in the area of generalizability of findings, future studies should expand the scope by adding more hospitals and using larger sample of staff to include other stakeholders like the board and patients. Again, future studies can focus on the effect of MIS deployment on employee performance.

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