

# Framework For Effective Management Information System In Public Institutions In Ghana

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## **Abstract**

Public institution spend huge budget on management information system (mis) but most mis in public institutions in ghana are recognized as ineffective. This study therefore developed a framework to guide improving mis design and implementation in public sector institutions in ghana. The study solicited view of 20 experts of information system from public institutions in ghana through interviews. The interview data were analyzed using thematic and narrative methods to explore how mis can be improved and developed to enhance decision making and operations of public sector institutions in ghana. The study observed that moving away from departmental information system to enterprise-wide information with a high-level executive in charge and lead information steward for every business unit is a way to go. Public sector institution mis framework should compose of data sources where all relevant data sources for the institutions are considered, data processing with all relevant features for effective data processing and data dissemination where the system can auto-generate management reports, and provides feedback on work progress.

**Keywords:** improving management information system, framework for management information system, public institutions, and ghana

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## **I. Introduction**

The adoption of management information system (mis) has become an integral aspect of governance and organizational performance in ghana and across the world (mnjama & wamukoya, 2007). Recently, mis has gained acceptance as a major tool to improve the dissemination policies of governments (guggenberger, schweizer,& urbach,2020), gather data, process data into information, and save data at a relatively lesser cost (berg et al., 2013; berg et al., 2013; melville, kraemer,& gurbaxani, 2004), improve data analysis and reporting, for decision support, planning and forecasting, communication and collaboration, resource management, and monitoring and control (mutale et al., & sherr, 2013; antwi & asare, 2019; davies, 2019).

Therefore, there is a call for developing and effective mis framework, especially for public sector organization to enhance public sector works. Framework of every mis comprises system quality, service quality, and information quality leading to net benefit of the adopting organizations (delone & mclean, 2003). In view of this governments like uk government is committed to the development of comprehensive mis framework through broader consultation (read, 2012). Also, the health department of canada sets out guidelines for the institutionalization of effective mis in all health facilities to record data about staff and patients (thompson, 1987).

In ghana, several scholars (for example, dapaa, 2019; krofi-larbi, 2015; owusu-oware, effah, & boateng, 2017; ampfo, 2020) have raised concern about ineffectiveness of mis in many public institutions, hence, calling for an effective mis framework to guide development of an effective mis for public sector organizations in ghana. For example, a study by ampfo (2020) examined the challenges of mis in ghana by focusing on the university of development studies, tamale. The study found that information users such as lecturers, students, and administrators are unable to access readily information from the management information systems. It also revealed that the website and online databases are usually slow in responding to the request of information users. Also, it was found there were inadequate management information systems experts working with the information department of the university of development studies, tamale. Also, a study by ocloo & king (2022) on the effectiveness of mis among academic libraries in ghana discovered that most academic libraries in ghana did not have effective information systems policies and staff were usually not consulted before the installation of information systems. Antwi & asare (2019)'s study on the effectiveness of mis in public institutions in ghana by using the university of education, winneba, kumasi campus as a case study found that there is a poor framework and implementation of a management information system at the university of education, winneba. Kumasi campus. These studies and others have clearly demonstrated ineffectiveness of mis in public organizations in ghana.

However, independent empirical studies in Ghana have not considered how an effective MIS framework for public sector organizations in Ghana should be developed to support effective MIS for an efficient public sector in Ghana. This study, therefore, sought to develop an effective MIS framework for MIS in public sector organizations in Ghana. Next sections of the study focused on framework for MIS, concept of MIS and how MIS can be designed. Also, other sections considered research methods, results of the study, discussions of the findings with literature, and conclusions with policy recommendations to enhance MIS for public sector in Ghana.

## II. Framework For Mis

The development of MIS for public sector organizations is guided by the DeLone and McLean information system model. According to DeLone & McLean (2003), information system framework ought to comprise information quality, system quality and service quality and these combined lead to effective usage of MIS and user satisfaction, leading to higher net benefits for the adopting public sector organization. The DeLone and McLean MIS framework is shown in Figure 1.

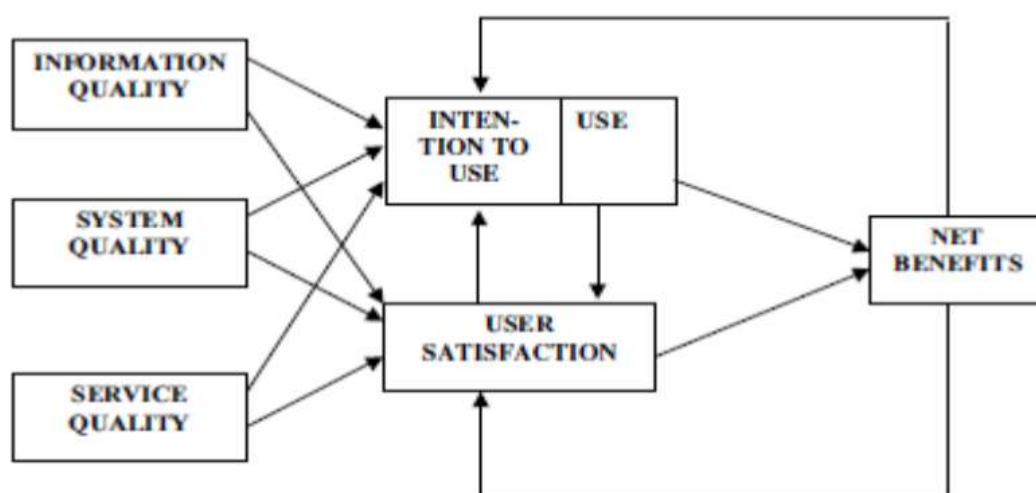


Figure 1: delone and mclean model

### Information quality

Information quality includes timeliness, correctness, completeness, relevance and dependability (Peter and McLean, 2009). In the contemporary industry, the backdrop of every communication step is the quality of the information (Michnick, 2009; DeLone & McLean, 2003). Michnick (2009) divided the information quality into four assessment components in order to test the information quality. The elements include accessibility, representational, contextual, and intrinsic. The information systems' output should be useful, easy to comprehend, accurate or less error-prone, succinct, comprehensive, or contain all necessary information (Almamary et al., 2014; Patterson, 2005). Therefore, MIS for public sector organizations should contain all relevant information that are accurate and reliable for an effective decision making.

### System quality

A system is an ordered assembly of components having unique interactions between the components, according to Belle et al. (2001; Hardcastle (2011). Every MIS should be able to take in inputs and convert them into outputs (Petter, DeLone, & McLean, 2008). MIS system ought to have hardware and software that meet adaptability, ease of learning, and simplicity of usage criteria. System adaptability refers to the ability of a system to adjust, evolve, or respond effectively to changes in its environment, requirements, or conditions. However, many MIS currently in use in public organization in Ghana do not meet the adaptability principle (Dapaa, 2019; Ampfo, 2020).

### Service quality

Service quality of MIS extent to which the system meets the expectations and requirements of its users in terms of reliability, accuracy, assurance, responsiveness, and overall performance (Peter & McLean, 2009; Roses, Hoppen, & Henrique, 2008; Berry et al. (1990). The capacity to deliver the promised service with accuracy and dependability is what is meant by reliability. Being responsive is being ready to assist clients and offer timely assistance. Assurance is the staff's competence, politeness, and capacity to inspire confidence. As with

any service, the quality of an mis is crucial for ensuring that it effectively supports the information needs of an organization. However, many clients of many public organizations like national identification authority in ghana are not satisfied with the services they receive though some of these organizations use mis. This implies that mis in many public organizations in ghana do not meet the requirement of service quality.

### **III. Management Information System**

Santos (1991) noted that mis as a planned system of collecting, processing, storing, disseminating data in the form of information needed to carry out the functions of management. This view is shared by Lucey (1997) who defined mis as a planned system of collecting, storing and disseminating data in the form of information needed to carry out the functions of management. Similarly, Wehrich & Koontz (2001) defined mis as a functional system of gathering, comparing, analyzing, and dispersing internal and external information to the enterprise in a timely, effective, and efficient manner. Consequently, mis provides information that organizations require to manage themselves efficiently and effectively because mis is a key to planning, controlling and decision making for management through transaction processing of systems for the data (Suchi, 2017; Burns, (2011). An effective mis typically employs computer and other sophisticated technology to process information that reflects the day to day operations of the company. Mis bring people, procedures and devices together to convert data from internal and external sources into information that are relevant for management decision making (Laudon, 2003; Okunade, 2016). Mis uses human processes, computer hardware, software, analytical models to gather, handle, store, retrieve, analyze, and disseminate information (Okunade, 2016).

The management information system provides strong advancement in the field of information technology through which an organization can easily achieve its strategic objectives. It helps in decision support, venture management, resource and people management, and database retrieval application (Kumar, 2011). The use of mis supports organizational processes, competitive strategies, and operations which result and impact the performance of the organization as a whole. Investment in mis by the organization support it in core competencies, it also help in production process, human resources management, financial management and operational management (Burns, 1998; Munirat et al, 2014; Asemi, Safari & Zavareh, 2011; Das, 2012).

The relevance of mis in public sector is well documented. For example, Opeke & Madukoma (2013) carried out a study on information use and job performance of senior non-academic staff in Nigerian universities and concluded that mis had positive relationship with job performance of senior non academic staff in Nigerian universities. Also, Al-Zahrani (2010) investigated the role of mis in decision – making during crises at the directorate general of border guard in Saudi Arabia and revealed that mis was adequately used in decision – making during crises at the directorate general of border guard in Saudi Arabia. In a study, Abdulkareem, Alabi, Fashiku, & Akinnubi (2012) sought to find the relationship between the mis and senior staff job performance in polytechnics in Kwara State, Nigeria and found a significant relationship between the use of mis and senior staff job performance in the institutions.

The use of mis allows for simpler processes, and as de Oliveira *et al.* (2011) notes, institutions are resorting to technology to enhance and simplify information management. Based on their study on information systems and supply chain management in hotels, Kaya & Azaltun (2012) found that communication and information sharing among members of the supply chain provides has become more effective due to the use of mis. By ensuring more effective communication and assimilation of information in an organisation, managers can make more accurate and well-informed decisions for their respective departments. According to Ramachandra & Srinivas (2012), mis plays a vital role in the management, administration and operations of an organization suggesting that the benefits of using mis in an organisation include, improving organisational effectiveness, ensuring efficient and effective use of resources, promoting proactive business management, and the development of a learning organisation.

### **IV. How Mis Can Be Designed**

The question of how mis should be designed for public sector organization has motivated many empirical study in this regard. Al-Adaileh (2009) evaluated the factors that can improve the success of an information management system. The study adopted the quantitative research approach and used the convenient sampling technique to sample respondents for the study. A questionnaire was used to gather primary data for the study and descriptive statistics were used to analyze the data for the study. The study found that factors such as information quality, ease of use of information system, and usefulness of information system could be used as a criterion to evaluate the success of an information management system. Though the study was very detailed, the use of a convenient sampling technique may hinder the fair representation of respondents which can lead to data biases. This may lead to biases the findings and conclusions of the study. Musungwini & Mondo (2019) the skills and strategies needed for the successful development and implementation of management information systems within Zimbabwe's banking sector. The study adopted the qualitative research approach and selected 18 participants through purposive sampling from three banks in Zimbabwe. The study gathered primary data with the use of an interview guide. The study found that change management within organizations is a major

limitation to the success of information management systems. The authors also discovered that the effective management of people to accept change in an organization's culture can improve the adoption and implementation of effective information management systems. The study was very exciting, however, the author's study focused only on the banking sector which may limit the generalization or application of findings in other organisations outside the banking sector.

Malik & Khan (2009) explored the success stories of information systems in health institutions. The study adopted the case study approach and gathered data from primary and secondary sources. The primary data was obtained from 5 key informants and 20 users who were selected purposively with the interview guide. Also, the secondary data was obtained from selected studies published on the implementation of information systems in health facilities in Pakistan after predetermined inclusion and exclusion criteria. The study found that information systems in the health facilities of Pakistan were successful because of the parallel use of both paper and computers for information management before the full integration of computers. The study discovered that both users and management accepted the full initiation and implementation of the computer systems when they experienced its benefits. Though the study is insightful, the authors did not review theories to support the study. It is observed that few studies have focused on how MIS can be designed to suit an institution. The findings of empirical studies revealed that factors such as ease in the usage of the information systems can determine the suitability of management information systems. Also,

Musungwini & Mondo (2019) found that ability of management to effectively manage change in an organisation can determine the suitability of information systems. The findings of Malik & Khan (2009) for instance gives further details to the findings of Musungwini & Mondo (2019), who indicated that organisations can successfully manage change in management information systems through the parallel use of both paper and computers for information management before the full integration of computers. Though these studies very educative, they lack theoretical underpinnings which can limit its policy implication.

## **V. Methods**

### **Research Approach**

The study used constructivism to explore how MIS can be developed for public sector organizations in Ghana. With the constructivism, the study was able to construct understanding and knowledge about how effective MIS can be developed for public sector based on the experiences, interactions, and reflections of information system experts and practitioners.

In consonance with the constructivism, the study employed case study design where national identification authority's information system was used as a case study. Case study design was used because it provides an in-depth exploration and analysis of a particular case or cases within their real-life context (Winit-watjana, 2016). It also provides rich and detailed description of the phenomena under investigation. This depth of detail is valuable for gaining a nuanced understanding of complex situations (Parvaiz et al., 2016; Maarouf, 2019). Therefore, with the case study design, the study adequately explored how MIS can be developed for the public organizations, using the experiences of NIA.

### **Sampling Procedure And Sample Size**

The study used purposive sampling technique to sample the participants for the study. Purposive sampling is used when the idea is to sample individuals who have in-depth knowledge and information about the issues under consideration (). Though this study focused on NIA as a unit of analysis not every staff in NIA have in-depth knowledge about the development and functionality of MIS. Thus, this study sampled only staff who have in-depth knowledge about the development and functionality of MIS. These staff happened to work in the technology and biometric department and operational department of NIA; hence, these staff were purposively sampled for the study. However, to have diverse view from other public institutions, the study further purposively sample information system experts from other public institutions, particularly, information system experts from electricity company of Ghana, passport office, Ghana port and harbour authority, and energy commission.

The study selected 10 management members from the technology department and operations department of NIA, and 2 information system experts from each other selected public institutions. In all 20 people were interviewed.

### **Data Collection**

The study used unstructured interview guide to collect the data from the participants. The study used unstructured interview guide for two main reasons. Firstly, it is most suitable for exploratory research where the goal is to gather rich, in-depth information about a topic or phenomenon (Tetnowski, 2015). Also, it provides flexibility, allowing the interviewer to adapt to the flow of the conversation. Interviewers can explore it

unexpected or unplanned topics that arise during the interview, leading to a more organic and dynamic discussion (hancock, algozzine, & lim, 2021).

The design of the unstructured interview guide was guided by delone & mclean (2003), information system framework. Specifically, the interview centered on themes like how mis can be improved with emphasis on system, information and service quality and key indicators of an effective mis framework for public organizations. The interview with the participants was conducted by the researcher in the offices of the participants the researcher read the interview questions and the participants provided the responses. The researcher sought the consent of all the interview participants to record the interview proceedings with a tape recorder.

### Data Analysis.

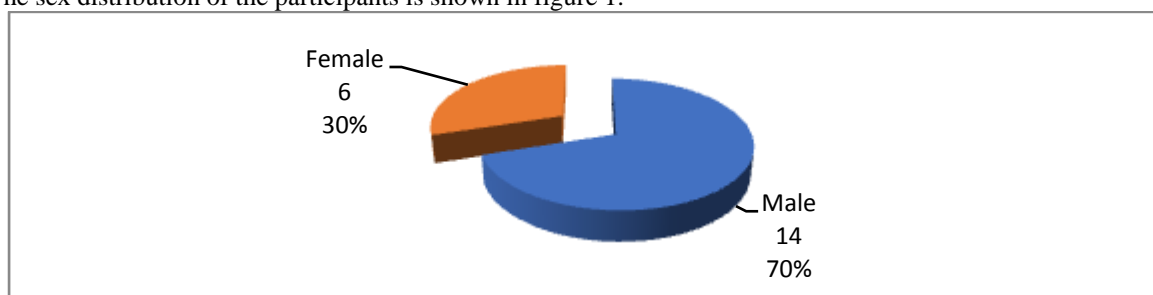
The study transcribed the interview data and then analyzed the data using thematic and narrative analysis. This study used narrative interview analysis because helps to provide vivid illustrations of some of the themes, based on responses provided by the respondents. Also, the thematic interview was used because it helps to identify common themes – topics, ideas and patterns of meaning that come up repeatedly from the responses of the respondents. Also, the thematic analysis is widely used because, it has a high degree of flexibility (boyatzis, 1998; gioia et al., 2013). The combination of thematic and narrative methods of interpreting qualitative data enhances clarity and understanding of analysis of the interview data (btyman, 2001; braun & clarke, 2006).

## VI. Results

### Demographic Characteristics Of The Participants

#### Sex

The sex distribution of the participants is shown in figure 1.



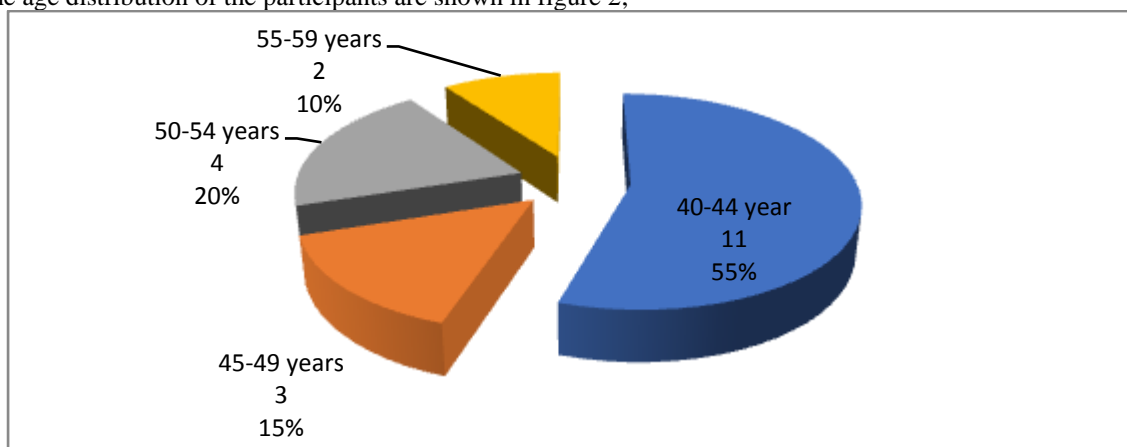
Source: field data (2023)

Figure 1: sex distribution of participants

From figure 1, males dominated over female where males accounted for 70% of the participants and females 30% of the participants. This clearly shows that male staff dominate the information system profession in ghana.

#### Age

The age distribution of the participants are shown in figure 2;



Source: field data (2023)

Figure 2: age distribution of participants

Figure 2 shows that most of the participants (55%) in the study were youthful between 40 and 44 years. The remaining of the participants were between 45 and 49 years (15%), between 50 and 54 years (20%) and between 55 and 59 years (10%).

### **Strategies For Improving Mis For Public Sector Institutions In Ghana**

The responses from the key informants who were technology and operations managers staff of selected public institutions and experts in management information system were categorized into five (5) themes as follows;

#### ***Theme 1: access to verification features in mis***

All the 20 key informants note that granting access to verification by institutions and agencies would help make mis in public institutions more relevant. For example, key informant 1 stated that verification is a major factor that would enhance the effectiveness of mis in any public institution. Therefore, the any mis should have verification features to help ensure accuracy, reliability, and integrity of the information stored and processed within the system. The participants mentioned some of the verification features needed in mis for public institutions to include data validation feature, error checking and correction feature, audit trail, access controls, data encryption, concurrency feature, cross-verification with external sources and backup and recovery as many of the information system used in some of the institutions do not have all of these features.

#### ***Theme 2: adding booking features***

Another feature that needs to be added to the mis is the booking features. The participants explained that this book feature is however relevant in mis for selected institutions like nia, hospitals, hotels, and passport office that deal with huge number of clients. All participants from nia explained that current mis in nia does not have booking feature that bring undue pressure on staff as many people troop in everyday at the head office of the nia to register and or retrieve their cards.

#### ***Theme 3: integrating artificial intelligence***

All the key informant indicated integrating artificial intelligence (ia) into mis is a sure way to enhance mis in all public institutions. For example, participant15 also stressed that mis must include notification system, artificial intelligence and instant messaging to improve the interactions among all staff and management and between staff and management to facilitate strong cohesive work. Also another participant stressed as follows;

*“the interaction features in many mis in many public institutions in ghana is out-dated and so it should be updated to an instant messaging feature. This way, when something is very urgent, the staff is able to know and deal with it as the necessity and urgency requires it to be done.....you know the artificial intelligence will flag inconsistencies in reports generated and point out errors that are in reports and this will prompt the staff to do a quality job since a little inconsistency can do more harm to the client”* (participant 10, manager of technology department).

#### ***Theme 4: data analytics***

Another feature that was highlighted was the decision making feature and this was highlighted by all the participants. They explain that mis should be able to analyse data itself so that the management can be able to make a decision instead of making the staff themselves manually adding up data and analysing them before it is being sent to the management for decision making. The participants indicated that features such as data reporting, data querying, data visualization, online analytical processing, decision support system, data mining, business intelligence integration and statistical analysis tools as these tools are becoming more important in all public institutions in ghana. A participants noted as follows;

*“mis ought be comprehensive but what i know about our mis is not comprehensive and lacks management decision making component and this should be addressed if we are serious about adoption and using mis here”* (participant 5, manager of operations department).

#### ***Theme 5: education of staff and staff involvement in mis***

All the participants raised the issues of lack of training and involvement of key staff in the development and design of mis in almost all the public institutions. The participants stressed on the importance

of involving all key staff in all departments in the processes leading to the adoption, design and implementation of mis so as to ensure is acceptance and utilization. A

Participant explained;

*“currently i have heard that they are trying to update the system but they have not consulted us to let them know how the system is work. So how can they update it to meet the current challenges?”* (participant 1, senior staff of operations department).

Participant 4 stressed as follows

*“not all the staff in this institution even know about the system and even those who know about it cannot use all the feature on the system since they have not been trained”* (participant 4, Senior staff, operations department)

Participant 8 also stressed that staff need to be trained by experts to fully understand the use of the system. Key informant 8 stated as follows;

*“there is more room for improvement in the current management information system and so when these new features are integrated into the system, the experts can comprehensively train the staff to better understand the system.”* (participant 8, senior staff in technology department).

#### **Development Of Framework For Effective Mis At The Nia**

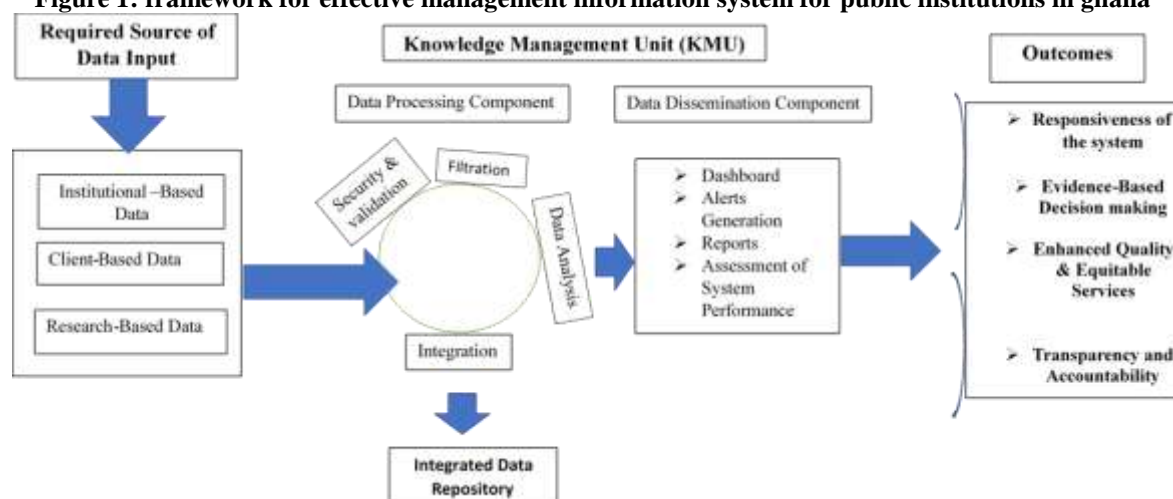
The study asked the participants how an efficient framework for mis in public sector should look like and the participants provided useful suggestions and these suggestions are summarized in table 1.

**Table 4.18: emerging issues for effective mis framework/ development**

Component for consideration	Specific	Details
Source of data as input for mis	Client information	Currently many public institutions inputs only client information but that is not enough.
	Institution –based data	The participants recommended institution-wide data (that is, data from all department) as input into mis
	Research data	Participants identified research data as useful data for all institutions and this should be captured into mis.
Data processing	Security and validation	Currently, the information system in many public institutions has very good security features and this was recommended by all the participants
	Filtration	Currently, mis in many institutions have very good filtration features and this was recommended by all participants
	Data analysis	All participants noted that mis in many institutions do not have good features for analysis to inform decision making. All participants called for such features to be added to mis for the institutions
	Integration	Many mis in public institutions lacks integration and all participants recommended features of data integration where data from all sources are combined into single, unified view.
Data dissemination	Dashboard	Many mis in most public institutions have good bash board features and this the in opinion of the participants is very beneficial
	Alert messages	All participants noted the importance of feedbacks as feature of mis and called for feedback or alert messages apps on any future mis
	Reports generation	All participants noted that mis in many public institutions do not have a comprehensive features for report generation to inform decision making. All participants noted that any future mis should have features for report generation to inform decision-making
	System performance assessment	All participants noted that most current mis in use lack the ability for system performance assessment and called for features of system performance assessment in any future mis

The study used the responses provided as summarized in table 1 to develop a framework that can guide future development of mis for public institutions in ghana. The framework is shown in figure 1.

**Figure 1: framework for effective management information system for public institutions in ghana**



### Required Data Sources

The data sources are categorized into three as institution-based data, population-based data and research-based data.

#### *Institution-based sources*

The institution-based sources comprises all data from all departments within the institution. The idea of this data is to help effective management decision making process.

#### *Population-based sources*

Data on every individual within predetermined populations is produced via population-based sources. This is a client's data. This data sources comprises past, present and future client data.

#### *Research -based sources*

Research data is an important component that may help build the connection between evidence-based knowledge and current policies to identify gaps that can be filled up and taken into account when developing monitoring and evaluation techniques.

### Knowledge Management Unit

Knowledge management unit can be implemented as a mother concept integrating the services of the operational directorate and the technology directorate. The it assistance will be needed to direct the input of large amounts of data from the source via the data analysis unit, which is run by superiors, to produce evidence-based information that will be distributed to the knowledge management unit's end users. This will help the users of the knowledge management unit develop the organisational and technical skills necessary to provide high-quality data for efficient monitoring and evaluation, strengthening the decentralisation process. The term "decentralisation" in this case refers to the flow of input from the public, management, and the clients to the decision-makers. This increases responsibility within the system and leads to better results.

#### **A. Data processing component**

The knowledge management unit's key phase in keeping with the framework is to compile all the data from diverse input sources. The knowledge management unit would examine the available data inputs and transform them into evidence-based information that may aid in warnings, planning, monitoring and evaluation methods and reports, strategic planning, and policy briefings. The data collected from the input source is routed through the data processing component in a continuous cycle, and particular tasks are carried out to produce evidence-based information, such as data validation and inspection and data filtering, depending on the necessity and reliability of the source. The data is then examined either qualitatively or statistically for managerial decision-making. The team will subsequently utilize the processed data for the programme and task specific data integration in the integrated data depository.



## **B. Data dissemination component**

The distribution of the information to the stakeholders and maintenance of the knowledge management unit are the major responsibilities of the knowledge management unit once the data has been processed. Different formats may be used to convey the information that was obtained through data analysis;

- i. The integrated information may be presented as a dashboard for the provision of updated information to all users. This would include stakeholder updates, downloadable statistics and rationalised statistics.
- ii. The data may be used to produce alerts based on established parameters to guarantee effective service response, ensuring a constant forward and backward flow of information throughout the system. This will facilitate the creation of a system for on-going evaluation and monitoring of the services and alert response.
- iii. Based on the users' participation in the model's framework and compliance throughout the input phase, report creation and performance evaluation may be evaluated immediately. The value of the evidence-based information in this situation is in the ability of the management to compare the result indicators with the data collected, which will serve as a representation of the system's compliance, without being hindered by voluminous black-and-white paper paperwork. Reports on employee performance, organisational performance, service duplication, financial performance and accountability, monitoring and evaluation, service quality, service mapping, and many more topics may be created.

## **Outcomes Of An Efficient Mis Framework**

The management information framework must generate observable advantages while taking resource costs into consideration in order to remain viable. It is anticipated that when public institutions' mis perform better, it will hence system responsiveness, evidence-based decision making leading an effective and efficient decision making, quality and equitable services and transparency and accountability in the public institutions in Ghana.

## **VII. Discussions**

The study revealed that effective mis framework ought to include all the data sources (internal data, research data and client data), data process and data dissemination and when these components are effectively designed and utilized, decision making, accountability and transparency and system efficiency would be achieved. Mbondji, kebede, soumbey-alley, zielinski, kouvidila, & lusamba-dikassa (2014) explained that public institutions should carefully select and integrate data sources based on their specific needs and objectives. Mbondji et al., (2014) further added that data security and privacy considerations should be taken into account when collecting and using data for mis. It must be added that the use of all relevant data sources in the development of mis is fundamental for making informed decisions, optimizing resources, staying competitive, and ensuring the overall success and sustainability of an organization (sivertsen, 2019).

Also, mis performance depends greatly on its data processing features. This is because, data processing features enable the system to collect, and store information from all the data sources (). The data processing features helps to transforming raw data into meaningful data to support decision making (). The data processing features that need to be considered into mis development include data security, filtration, data analysis and data integration. Once data are collected and processed, the next thing is dissemination of the data. Under data dissemination, features such as dashboard, alert messages, report generation apps are considered.

Also, public sector institutions should have enterprise-wide information management system with a high-level executive in charge, appointing a lead information steward for every business unit to help create risk controls for the information, using a data management system to shed light on the institution's data and applying big data analytics to information to spot trends and make predictions are strategies to improve information system in the public sector institutions. Also, it is believed that if unnecessary physical space occupied by junk or defunct machines is cleared, it can make way for new machines that will enhance productivity and reduce the workload on the employees (mahmood, ahmed, & fadhil, 2021). Also, when unnecessary digital storage is cleared, the software will be able to function effectively. When the cache and random access memory of computers are cleared or installed with a bigger size, software can run effectively and enhance productivity. However, in the case where the cache has not been cleared in a long time and there are numerous applications running on the computers at a time, the computer over time starts to lag especially in instances when the computers have lower size for the random access memory (gorry, & scott morton, 1971). These lags restrict the performance and execution of tasks and affect the productivity. Also, from time to time, there should be random checks on the system to check for bugs that are used to siphon information from the system. There are instances where bugs are implanted from the back door of information systems with sophisticated firewalls breached by hackers to siphon information for money on the dark web. Such bugs and malware must be checked regularly and administrators must ensure that attention is paid to little details with notifications on patterns of unusual behavior in the system to block whatever harm that can be caused to the information system (kumar, 2004).

### **VIII. Conclusions**

Though mis absorbs huge sums of money in public sector institutions, many institutions are without an effective mis. As a result, there has been an effort to improve mis in public sector institutions in Ghana. We developed a framework to guide the improvement of mis in public institutions in Ghana. Our mis framework moves away from mis that focuses on operational area to enterprise-wide entity framework. Firstly, the study concludes that the information system in public institutions in Ghana can be improved and Ghana has several information system experts to help in the improvement of mis used in various public institutions. The public institutions should move away from departmental information system and adopt an enterprise-wide information management system with a high-level executive in charge and lead information steward for every business unit to help create risk controls for the information system. The study further concludes that every mis framework for public institutions should compose of data sources where all relevant data sources for the institutions are considered, data processing with all relevant features for effective data processing and data dissemination where the system can auto-generate management reports, and provides feedback on work progress.

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