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**Effects of Technology on the Performance of Monitoring and Evaluation System in  
Projects undertaken by Non-Governmental Organizations' Projects in Ghana**

By

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## **ABSTRACT**

The demands for greater accountability and real results have increased, there is an attendant need for enhanced results-based monitoring and evaluation (M&E) of policies, programs, and projects. A functional M&E systems as a results-based management tools involves careful collection of realistic proof to determine the degree to which expected outcomes are achieved. In gathering this M&E data, most of the developing countries and local NGOs still largely depend on paper-based data collection and reporting of information, an approach with inherent problems related to poor infrastructure, timeliness, quality and accurate data flow. These challenge affect the effective performance of M&E system which rely on quality data. This study seek to assess the effects of technology on the performance of M&E system in Non-Governmental Organization in Ghana. The study adopted quantitative research approach to collect data for better understanding of M&E system, how technology affect data collection and quality and M&E system challenges in the NGOs. A structured questionnaire was employed to capture data from 53 sampled NGOs in the Northern region. A response rate of 96 percent was recorded. Data was analyzed using descriptive statistical method, frequency and percentages, mean score ranking and Relative Importance Index raking (RII) and presented in tables. The study revealed that, management of local NGOs have seen the need for effective M&E system in measuring performance and impacts of interventions and have therefore set up M&E systems in their organizations. The use of technological tools had positive effects on the performance of M&E system through its effect on data collection and quality. The greatest effect was on timeliness and integrity of data that influence management decision making and impact evaluation even though there were some challenges that face M&E system and the use of technology like limited network and security risk among others. The study concludes that, the use of technology in M&E data collection, analysis and quality have a positive

relationship M&E system and therefore need to be integrated in all stages of project life cycle. The study therefore recommend that, Standard Operating Procedures (SOPs) should be developed and enforce to ensure proper integration of technology into M&E system as M&E system is integrated in all stages of project life cycle. Also, modern technology for M&E data analysis and storage like online databases (servers, dropbox, clouds etc.) should be integrated in organizational M&E system. Human, financial and material resource allocation with the support of SOPs would help address the challenges of M&E system.

**KEY WORDS:** Technology, Monitoring and Evaluation System, Performance of Monitoring and Evaluation System, Data Quality and Non-Governmental Organization.

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## ACRONYMS

ACF	Action Contre La Faim (Action against Hunger)
AIDS	Acquired Immune Deficiency Syndrome
AILAP	Agriculture Improvement and Land Access Programme
CAP	Capable Partners Program
CIF	Client Intake Form
CLEAR	Centre for Learning and Evaluation Results
DQA	Data Quality Assessment
GPS	Global Positioning System
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HND	Higher National Diploma
ICT	Information Communication Technology
IFRC	International Federation of Red Cross
IFRCRCS	International Federation of Red Cross and Red Crescent Societies
IHDSS	Ifakara Health and Demographic Surveillance Systems
ITU	International Telecommunication Union
LQAS	Lot Quality Assurance Sampling

M&E	Monitoring and Evaluation
mHealth	Mobile Health
NGOs	Non-Government Organizations
ODK	Open Data Kit
OECD	Organization for Economic Cooperation and Development
PhD	Doctor of Philosophy
PLACE	Priorities for Local AIDS Control Efforts
RII	Relative Importance Index
SAMDI	South African Management and Development Institute
SMART	Specific, Measurable, Achievable, Reliable and Time bound
SOP	Standard Operating Procedures
SPSS	Statistical Package for Social Sciences
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nation Development Programme
UNFPA	United Nations Population Fund
UNWFP	United Nations World Food Programme
URL	Uniform Resource Locator
USAID	United States Agency for International Development

VPP

Vulnerable People's Programme

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## **DEDICATION**

I wish to dedicate this work to the Almighty God, my son, Suguruman Samuel Kombian Fant, and to my parents Mr. and Mrs. Kombian Fant.

## **CHAPTER ONE**

### **GENERAL INTRODUCTION**

#### **1.1 BACKGROUND TO THE STUDY**

Non-Governmental Organizations (NGOs) all over the world are regarded as key players complementing government in the socio-economic development of most countries. The NGO has become an important and curial part of most developing countries by providing political, social, environmental and economic needs of the less privileged, vulnerable and disadvantaged.

Through the dawn of globalization, there are increasing pressures on both organizations and governments all over the nations to be more responsive to the demands of both external and internal stakeholders for accountability and transparency, greater development, good governance, effectiveness and delivery of tangible results. Governments, citizens, NGOs, Civil Society organizations, local and international organizations, and donors are interested in best performance. There is therefore the need for enhanced results-based monitoring and evaluation (M&E) of policies, programs, and projects because of the increased demands for better accountability and tangible results (Kusek and Rist, 2004).

Local and international NGOs everywhere the globe have proposed and executed programs and projects in several segments such as agriculture, health, and education with the aim of augmenting government struggles in improving the lives of its citizen (Nalianya and Stephen, 2017). These projects and programs are mostly funded by bilateral and multilateral donor agencies. NGOs in Ghana have received significant amount of resources by multilateral and bilateral donors to

implement projects and programs, hence the need to ensure that these resources achieved the intended purpose.

According to Nalianya and Stephen (2017), the success of these projects and programs to a large extent has always depended on M&E. In the quest to achieve value for money, most NGOs have adopted M&E as a result-based management tool in measuring their performance. WHO (2006) observed that monitoring the improvement of actions and evaluating the goals and effect of interventions were indispensable to enhancing performance and outcomes.

The Government of Ghana has recognized M&E as a vital component in the design and management of development and have for this reason created a ministry for M&E and has prescribed policy planning, M&E structures across all spheres of the economy in civil service law.

According to the World Bank (2011), monitoring is defined as the routine and systematic process of gathering, analyzing and reporting information on project inputs, activities, outputs, outcomes and impacts of an intervention. This therefore serves as a base evaluation approach which helps in determining the efficiency, effectiveness, sustainability, relevance and impact of a program or project, by providing managers and stakeholders with updates regarding the program or project progress and attainment of its goals and objectives within the assigned resources. It therefore informs management when things go wrong.

Evaluation on the other hand is defined as the systematic and objective assessment of an ongoing completed policy, program or project (OECD, 2002). The goal of evaluation is to assess the relevance, effectiveness, efficiency, impact and sustainability. Thus, it makes comparison between the actual and the planned. Also, Uitto (2004) argued that evaluation is logical and self-governing; thus serves as an assessment of an ongoing or accomplished program or project, including its

execution and effects.

Rist, et al., (2011) argued that M&E systems are essential components of measuring performance of action-based activities. Thus, M&E systems are results-based management tools which involve thoughtful collection of pragmatic evidence to determine the degree to which expected outcomes are attained, so that needed modification to the proposal and execution of actions or activities could be made to enhance and account for performance in realizing envisioned outcomes (Mayne, 2007).

M&E system is a correlated modules within a structure with a collective aim of tracking the execution and outcomes of a program or project (SAMDI, 2007). M&E system have been in existence for long (Kusek and Rist, 2004), however in this modern times, the necessity for M&E system as management toolkit in measuring actual results or performance has increased with demands by NGOs and other organizations including the government for accountability and transparency. This research therefore seek to assess the effects of technology on the effective and efficient performance of M&E system in NGOs in Ghana in order to meet the demand for accountability and transparency.

## 1.2 STATEMENT OF PROBLEM

There are growing demand on governments and NGOs to demonstrate successes and efficiency of their policies and programmes. The struggle by majority of NGOs and governments, especially local NGOs to justify their performance and establish tangible outcomes continue to stain their image as development change agents to several sponsors and other stakeholders.

The complexity of growth and development, in addition to broadening the range of public and private sector players, as well as increasing request for more timely response to key stakeholders

and donors have dared the efficacy and effectiveness of conventional methods of monitoring and evaluation in several development situations (Linda and Michael, 2014).

M&E systems face challenges and do not perform satisfactorily. There have been reports by donors complaining of the inadequacy of M&E interventions of projects implemented by NGOs (Abalang, 2016).

According to CLEAR (2012), many Ghanaian NGOs lack the capacity to employ both M&E professionals, in-house ICT and staff who are well skilled to understand M&E and develop appropriate tools. Hence this has brought about the design of inferior M&E systems that do not meet internal and donor requirements.

Functional M&E systems should capture information that will help to determine the progress and status of a particular policy, programme and projects (Peersman and Rugg, 2010). NGOs need M&E data at various levels to determine whether their programs or projects are working and to better prioritize program or project areas, to keep track as well as to document progress on indicators and performance.

M&E systems in all sectors rely on data. Both public and private sector institutions in the developed world now commonly use electronic databases for most of their M&E needs, which automatically aggregate and analyze data, populate reports, and send the reports to responsible parties. However, much of the developing world still largely depends on paper-based data collection and reporting of information, an approach with inherent problems related to timeliness and quality. Paper-based data collection and reporting for M&E systems are complex because poor infrastructure averts timely and accurate flow of data.

The advancement in technology has brought a lot of changes in numerous areas including the way policy, programs and projects are monitored and evaluated. The traditional approach of M&E is being replaced by digital process or approach. The digitalization process is being accepted because of its efficiency, accuracy, transparency, robustness and ease of analysis. (Muzerengwa, n.d). According to Priscilla Chomba of Danish Church Aid, “every humanitarian and developmental organization must become a digital organization, and those who fail to do so will die.”

Recently, organizations are being assessed based on their statistics. The ability of an organization to track its impacts means it has to work with data; that is, collect and perform analysis. To get this analysis done, organizations are gradually applying technologies in M&E. Technology, mostly smart phones and tablets, are being used as an effective and effectual way of collecting and analyzing M&E data. M&E system is a driver for the use of technology even though many organizations are still faced with many challenges realizing the complete potential of technology in M&E system (Schiche, 2015). This study therefore seeks to discover the pronounced potential effects of technology that can be used to improve the efficiency, usefulness as well as performance of M&E system of NGOs in the Northern region of Ghana.

### 1.3 AIM OF THE STUDY

The main aim of this study is to assess the effect of technology on the performance of M&E system in projects undertaken by NGOs in the Northern region of Ghana.

### 1.4 OBJECTIVES OF THE STUDY

1. To identify the types of technologies used by local NGOs in collecting monitoring and evaluation data.

2. To determine the effect of the technologies on M&E with regards to data collection and data quality.
3. To identify challenges with technology and M&E faced by NGOs.

## 1.5 JUSTIFICATION OF THE STUDY

This study seek to assess the effects of technology in improving the efficiency of data collection as well as M&E systems performance of local NGOs in the Northern region of Ghana.

It is hoped that the study would be of significance to organizations by contributing to better understanding and knowledge of strengthening monitoring and evaluation systems. The study is hoped to benefit scholars and researchers who may use its outcomes as a reference and to improve M&E literature. It is imperative for program/project experts to apprehend the dynamics of M&E in program/project implementation. This study would mainly help NGOs, program managers, donor agencies and M&E staff to better understand M&E systems and in what way to develop the systems to meet the anticipations of sponsors, and offer valuable data for upcoming programs and projects.

Evidence-based decision-making are made using available data. Data is key in decision-making and how this data is collected, processed and analyzed is key to ensuring that data given for decision meets all the data quality criteria.

It is a digital age and technology is making it easy to collect and transmit M&E information to stakeholders and allows more stakeholders to participate. This has also transformed the monitoring and evaluation process through the use of multiple apps and platforms that help with designing,

collecting, analyzing and cleaning of data at a faster, better and cheaper rate; and are opening up all kinds of possibilities.

## 1.6 SCOPE AND DELIMITATION

The study would be conducted among local NGOs in the Northern region of Ghana. The Northern region is where most of the NGOs are located. The study is delimited to local NGOs with M&E systems in place in the Northern region of Ghana, irrespective of their operational areas.

## 1.7 STRUCTURE OF REPORT

The study seeks to assess the effects of technology on performance of M&E systems in local NGOs in the Northern region of Ghana. The study report would be structured as follows:

Chapter one looked at the background to the study, problem statement, objectives, research questions, significance, scope and delimitations of the study; and operational definition of terms.

Chapter two covered review of related literature on the effects of technology on the performance of M&E systems. The literature review covered the role of NGOs in development, the concept of M&E systems, effects of technology on data quality and the performance of M&E systems.

Chapter three of the study looked at how the study was conducted. It focused on research design, study population, sampling size, data collection methods and techniques, validity and reliability, and ethical considerations. Chapter four of the study covered presentation of data, analysis and interpretation of the findings based on key objective areas of study using frequency tables. Chapter five presented the summary of the findings, conclusions and recommendations to the study.

## 1.8 DEFINITION OF KEY TERMS

**Technology:** means devices, networking components, applications and systems that when combined permit people and organizations to interact in the digital world.

**Monitoring and Evaluation:** is the systematic process of gathering and analyzing data of continuing program or project and the comparison of these program or project outcome and impact against the program or project intentions.

**Monitoring and Evaluation System:** this is a linkage between different set of modules within a structure to serve a mutual aim of tracking the execution and effects of interventions.

**Performance of Monitoring and Evaluation System:** Performance of M&E systems is the ability to measure project activities to provide users of the system access to quality and accurate data used for organizational learning and decision-making.

**Data quality:** define a feature of data that can be measured or evaluated against defined standards in order to determine the quality.

**Non-Governmental Organization:** is “a private voluntary association of individuals or other entities, not operated for profit or for other commercial purposes but which has organized itself for the benefit of the public at large and having as its objective the promotion of social welfare in any of, but not limited to, the areas set out in the first schedule; includes a community based organization”.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 INTRODUCTION**

This chapter covered review of related literature on the effects of technology on the performance of M&E systems. It covers the following areas: the role of NGOs in development, the concept of M&E systems, effects of technology on data quality, and the effects of technology on the performance of M&E systems.

#### **2.1 ROLE OF NGOs IN DEVELOPMENT**

NGO is defined as private organizations that execute actions or events to provide basic social services, relieve suffering, protect the environment, and promote the interests of the poor (World Bank, 1995). The term NGO can be used to relate to non-profit organization autonomous from government. NGOs are normally value-based groups which rely solely or partly, on benevolent assistances and charitable service. The NGO sector has progressively become professionals and the values of humanity and voluntarism continue to be the vital defining characteristics (Shah, 2005).

Since the late 1970s, NGOs have been a major part in the development sector and generally acclaimed for their strengths as ground-breaking and grassroots-motivated organizations with the aspiration and capability to follow participatory and people-centered method of development; and to seal the gap developing nations and governments are unable to. Countries with limited finances coupled with poor governance and corruption have failed to bring about the needed development for all their people. As a result, alternative means of development have been pursued and since 1980s, NGOs have been seen as one of the means by which this development gap can be bridged

through the provision of services, goods and enabling conditions for citizens to secure livelihoods (Banks and Hulme, 2012).

Before 1980s, NGOs received aid from the development community in a form of funding, technical assistance, equipment and trainings to position them to meet the development needs of their societies and beneficiaries. However it was recognized in the 1980s that as NGOs were empowered to implement development intervention, little attention was placed on enhancing the capability of NGOs to monitor and evaluate their intervention to ensure positive impacts and sustainability. Sustainability of NGOs in terms of improved efficiency and effectiveness were regarded as key both in their ability to execute their role in development, and the future of the existence of NGOs. This evolution continued to date. Now donors and other development partners continue to provide not only funding to NGOs but have also begun to channel funding towards improving the sustainability of these NGOs (Mouton, 2010).

NGOs have played a major role in bring about globalization and democratization in less developed countries, and various unanticipated changes in the presumed role of governments. This can be accredited to the growth and increased number of NGOs, both local and international. They have filled the role and performed responsibilities that governments could not, or unwilling to perform (Lehman, 2007). There have been an increased reorganization of NGOs work in the society. This is because they are seen to be more efficient, cost effective, ensure value for money and are able to reach more people, especially the vulnerable in society (Meyer, 1992; Sollis, 1992; Vivian, 1994) as cited by Emmanuel, 2015.

According to Nalianya and Stephen (2017), NGOs in providing development support to governments everywhere the globe have been challenged with the demand for accountability of their effort due to several informational needs their effort entices from several sponsors. Lewis and

Kanji (2009) as cited by Nalianya and Stephen (2017), observed that accountability is a multifaceted dare for NGOs, since they work with various populations and must to be answerable in diverse ways to these groups with diverse interests. Ramadan and Borgonovi (2015) agreed to this opinion, remarking that NGOs are expected to achieve and appraise their performance from manifold viewpoints, considering the intervention results, interest of sponsors, requirements of recipients and internal efficiency. This has high anxiety on the performance of NGOs interventions from numerous shareholders. Similarly, Kareithi and Lund (2012) stated that the duty of NGOs in global development has improved, alongside immense concentration and concern over performance of NGOs from experts, governments, citizens, donors, policymakers and academicians. This is as a result of lack of tangible and trustworthy proof on the effect of NGOs intervention performance (Davies, 2001).

The increased role of NGOs and the international contracts promoting the effectiveness and accountability of aid has steered the increase and appreciation of the role of M&E in the development agenda to demonstrate results. Also, the emerging concern over the effectiveness of relief or assistance to NGOs has made donors attach conditions to funds, for NGOs to demonstrate results, effectiveness and accountability. These conditions and requirements, in addition to the demand for desirable results by beneficiaries and governments increases, NGOs have been forced to show the impact of their interventions through development of comprehensive monitoring and evaluation systems (Emmanuel, 2015).

## 2.2 CONCEPT OF M&E SYSTEMS

The Organization for Economic Cooperation and Development (OECD, 2002), define monitoring as “a continuing function that uses systematic collection of data on specified indicators to provide management and main stakeholders of an ongoing development intervention, with indications of

the extent of progress and achievement of objectives and progress in the use of allocated funds”. In addition, Freeman (2003) stated that it is “a day-to-day management task of collecting and reviewing information that reveals how an operation is proceeding and what aspects of it, if any, need corrections”. Based on the above definitions monitoring has to do with gathering, recording, analyzing, communicating and using information with the aim of managing and making informed decisions. When this is accurately done, it becomes a vital tool for evaluation (Shapiro, 2006).

On the other hand, evaluation is defined by OECD as “the systematic and objective assessment of an on-going or completed project, programme or policy, its design, implementation and results” (OECD, 2002). The UNFPA (2004) also defined it as a time-bound management tool that objectively and systematically assess the relevance, performance and success of ongoing and completed projects or programmes as well as offer answers to what worked and what did not work and why. The aim of evaluation is to assess projects based on these five main areas, i.e. its relevance, efficiency, effectiveness, impact and sustainability (UNFPA, 2004). It also seeks to tell the success, failures and the cause for success or failure. The common types of evaluation undertaken include the baseline, mid-term, end-of-project and ex-post evaluation.

Even though monitoring is different from evaluation, they complement each other (Gorgens and Kusek, 2009). Also according to Nabris (2002), monitoring and evaluation is assumed and always seen together as if they are one. In real sense, they are distinct management tools but closely related and mutually supportive of each other. They are interlinked with each other and used by practitioners to purposely gather information to assess how effective a particular intervention is performing in the light of its objectives and goal. Monitoring as a management tool is used to improve the day-to-day operations, and occurs throughout the intervention or program whiles evaluation occurs periodically and uses research approach to determine if the intervention

objective has been met. It means that, neither can be substituted for the other because findings from monitoring forms part of evaluation process (UNAIDS, 2004).

What Power (1997) termed the ‘audit explosion’ similarly spread to the sphere of development around 1990. The necessity to produce evidence of impact of development interventions has necessitated an increasing need for data collection instruments and indicators, and in certain instance investigate with diverse methods and measurement tools. In 2000, monitoring and evaluation became vital to support reform agenda as stated in the Paris Declaration on Aid effectiveness and its related changes in aid modalities. This is because M&E afforded answerability and contribute to results-oriented development even though M&E system in both NGO and government around the globe have weaknesses that curtail achievement of development interventions.

M&E system worldwide is costumed to be a fundamental part of development system of most interventions or program designs (Chaplowe, 2008). M&E system has become a pre-requisite to acquiring donor funds globally. Donors now mostly require M&E system as a tool and precursor to the accreditation of accountability and transparency. For example, the United States Agency for International Development (USAID) require that a comprehensive M&E system is included in the organization documents to be able to receive funds. This help determine information on the performance management proposal, to design and manage the procedure of monitoring, analyzing, evaluating and reporting of actions executed. This also serves as a reference document indicating the anticipated and detail outcomes of the activities to be undertaken within the stipulated period of time (CAP, 2012).

According to Porter and Goldman (2013), in an article entitled “A growing demand for M&E in Africa”, using qualitative method of research stated that M&E systems are yet to be conceptualized

within the development effort to introduce a complete results-based orientation to the public service of these countries. Meaning the results models are not regularly applied in these case countries. He observed that, even those that applied results concepts seem to be generating perverse motivations that support rising compliance and control to the determinant of more development uses of M&E evidence. The qualitative process adopted provided a micro view of the demand for M&E in Africa since the study was restricted to only few number of cases.

A research conducted by Francis *et al.*, (2014) on the “Effective use of m M&E system in managing HIV/AIDS related projects: A case study of local NGOS in Kenya” using both qualitative and quantitative methods highlighted the effective use of M&E systems in NGOs but was limited to NGOs in the HIV/AIDS sector. The research provided an explicit view of the interrelationships between the factors affecting the effective use of monitoring and evaluation by project managers in NGOs. The use of mixed methods handled the issue of subjectivity and sample size. For this study the scope is not limited to NGOs working in the HIV/AIDS sectors, but across various thematic areas.

Also, a study conducted by Wachamba (2013) on “Determination of effective M&E systems in NGOs within Nairobi County, Kenya” using stratified random sampling method showed that there are difficulties in the application of the M&E systems, which was largely attributed to the tools and techniques used. This is due to the difficulty in their applicability. The role of management in the operations of the M&E system as well affects the effectiveness of the M&E system. Most of the respondents had attended M&E systems training and termed it as comprehensive and relevant since it contributed to the effectiveness of the M&E system as well as the competence of the staff. The M&E training was also found to be a vital contributor towards induction of local M&E experts, in addition to increasing the quality and quantity of the M&E human resource. The study was

purely quantitative hence it could not deal deep to understand the nature and type of M&E training that will be beneficial to an effective M&E systems. This study would address the gap to determine the type of tools used and how technology can help address the changes.

Zvoushe and Gideon (2013), examined the utilization of M&E systems by development agencies in the case of UNDP in Zimbabwe using qualitative study through reviews of success stories and in-depth interviews; and came out with the following findings: The serious professional for M&E function were yet to be employed. Straightforward baseline and performance indicators were also to be established. There was also little systematic usage of evaluation results from earlier projects. Notwithstanding the rich in-depth of the study using qualitative research method, the findings were subjective and did not give a macro view of various agencies.

Furthermore, Nathalie and Liesbeth (2015) used primary and secondary data gathered through semi-structured interviews with different players involved in an analytic assessment of the M&E system of Uganda's education sector. Their findings indicated that main components of Uganda's education sector M&E were already in place; nevertheless a number of challenges and weaknesses remained which were also frequently faced in other sectors and countries. With the use of this research method, their findings that these challenges and weaknesses often existed in other sectors and countries could not be generalized for other sectors and countries since they did not operate the same way. This study would want to determine the main M&E challenges in NGOs.

An M&E system is necessary for implementing agencies and NGOs to enable them gather reliable and accurate data that assist in determining progress on interventions and support practitioner and other stakeholders to direct, make judgements and draw valuable lessons (IFRC, 2011). Monitoring and evaluation is complex, but produces needful results when used rightly. Monitoring and evaluation are results-based management tools best for examining the relationship between

inputs and outputs, as well as actions and outcomes of developmental interventions. Briceno (2010) stressed that, the effectiveness of M&E system is reliant on the maximization of the information generated from the systems. Thus, a guided use of the outcome as a decision-making tool during and after the project period. It is therefore important for M&E practitioners and programme managers to deepen their understanding and knowledge of these two management concepts.

### 2.3 DATA QUALITY AND TECHNOLOGY

Data quality is a critical asset for the effective and efficient performance of M&E systems. The reliability and validity of results for informed decision making is dependent on the quality of data generated. The value of data is however dependent on the duration of collection, sources and analysis. For an efficient M&E system, it is significant to monitor data quality and thus confirm that the data gathered are meaningful and valid so as to meet the goals of international and local standard. The quality of the preliminary data collected could determine the data quality at all phases of the reporting process. Monitoring data quality also aid to advance data analysis and interpretation during M&E results reporting.

Ledikwe *et al.*, (2014) revealed that sufficient quality data collection for meaningful interpretation through the national health information system is a challenge in many resource limited countries. The descriptive qualitative assessment revealed that health projects usually had homogeneous data collection and reporting tools, and well-defined staffs for M&E responsibilities at the national, regional and district levels. Even though the findings demonstrated in-depth details of the issue the conclusions needed to be carefully hedged.

The study of Tara and Heidi (2013) indicated that improved data use and demand was enriched through the use of the logic model which offered direct procedures for informed decision making in program review and planning, advocacy and policy development. This was made known in their qualitative survey on improving the use of health data for health system reinforcement. Although, their findings outlined the vital role that Health Information System (HIS) play in improving health system, it could also sometimes present insufficient reliance on data that cannot be generalized for health decision making and other sectors to improve the data quality system.

Again, Mwajabu (2015) using both qualitative and quantitative methods in an evaluation on “Quality of data collection processes in Ifakara Health and Demographic Surveillance System: A case of malaria deaths data collection” determined that the data collection process of malaria deaths data in IHDSS was not as quality as it was supposed to be, because it was characterized by incompetent supervisors, outdated data collection tools, and unfamiliarity of the contents involved in the data collection procedures by data collectors. Their findings could be reliable and serve as a true reflection of the situation on the ground for effective management decision making because they used mixed approach. This also forms the basis for this study to determine how technology can be used to improve the outdated data collection tools and improve supervision.

A research conducted by Xiao *et al.*, (2014) on the challenges of data quality using qualitative method indicated that Client Intake Form (CIF) data availability and completeness normally improved after Data Quality Assessment (DQA). More highlights on data completeness would improve programs/project execution and readiness of dependable data for management decision-making. The researcher did not consider the other data quality criteria (timeliness, validity, integrity and precision) which equally play important role in ensuring quality data for decision

making and programme implementation. This study would therefore assess how the other criteria affect data quality.

Singh (2009) as cited by Juliet (2016) indicated data accuracy, time, cost, training, storage and ways of analysis as major concerns regarding numeric paper form of data collection for NGOs. The study also revealed that NGOs that used electronic systems of data collection mentioned difficulties with infrastructure and maintenance as their concerns. Gathering of data and filling of forms were key events for most NGOs; ease of use and cost were key concerns, frequently averting technology system. Even though electronic data was preferred, digitizing data was the bottleneck for data collection efforts.

Furthermore, a study conducted by Obure (2008) in Northern Ghana revealed a weakness in post collection data management system. The study revealed that; storage, processing and interpretation of data was not effectively managed. He concluded that this dare could really lead to collection of huge volumes of data which would offer misleading results. Data must be gathered and analyzed frequently on the objectives as well as its intermediate results.

M&E system in less developed countries are still using paper-based data collection and reporting systems that are challenged by quality in relation to accuracy, completeness, reliability, validity and timeliness. There is the need to therefore move from paper based M&E system to a more technology (electronic) based system such as the use of mobile technology. The use of technological system, for instance mHealth innovation in the health sector as indicated by (Khou, 2015) is collectively contributing to improvement in health service delivery and practice but have not yet been adopted systematically in effort to improve M&E system.

According to Mackay (2007), M&E feedback is another critical area to the effective performance and sustainability of M&E system. The use of technology offers a progressively cost effective choice to advance accessibility of M&E results, which would support and encourage transparency and culpability. Apart from the reporting schedules, a well design communication and dissemination strategy should be part of M&E system design.

Therefore, the use of appropriate technology in frequent data collecting, processing, storage, retrieval and analysis would help address the above-mentioned challenges and such data would be effectively and efficiently used to track and evaluate programmes/projects performance, improvement, learning and decision making.

#### 2.4 PERFORMANCE OF M&E SYSTEMS AND TECHNOLOGY

The term performance refers to a set of outcomes that characterize improvement in relation to an established goal. Effectiveness, efficiency, cost, beneficiaries' satisfaction and fundraising are the most commonly used performance indicators by NGOs (Carman, 2007). According to Ramadan and Borgonovi (2015), determining the performance of interventions will include the methods that assess its efficiency, effectiveness and impacts.

In most scenarios, frequent reports on progress to donors were conducted to give an account of activities and events undertaken, and immediate results. But these were unable to report whether the objective and goal intervention were being achieved (Khan, 2003). To demonstrate to donor's measurable difference and value for their money, quantitative indicators were essential. There was a challenge in feeding the aid system with numbers it needed and ensuring that these figures were meaningful and practical to collect (Hailey and James, 2003).

The common word for M&E has been to develop Specific, Measurable, Achievable, Reliable and Time bound (SMART) objectives and indicators. Designing M&E system that is based on easily measurable quantitative indicators has contributed to M&E system failure to provide necessary information for improving development interventions. Indicator driven method of M&E system always lead the system into quantitative data even though qualitative data is most needed for explanation, analysis and comprehensive decision making in improving project and programmes performance. Hence there was the need to employ both quantitative and qualitative data in M&E system (Woodhill, 2005).

## 2.5 EFFECT OF TECHNOLOGY ON M&E SYSTEM

The application of technology such as mobile, digital, aerial among others is broadening out and allowing more people to participate in M&E. It also allows project managers to analyze data using visualizations tools such as maps, graphs and charts. It helps make better and quick decisions. It makes monitoring faster and accurate, reach wider group and gets feedback from communities it serve.

Another effect of technology on M&E is the use of pictures and videos. Organizations working with individuals or communities can use videos and pictures to make them understand the most significant changes that has happened due to their intervention by taking before and after picture and videos of the intervention. This when well implemented, can inform future intervention design as well as bring learning to bear on how projects and programs are developed and implemented.

The flow of mobile technology such as phones has brought unique opportunity to introduce electronic data collection and reporting in M&E system. Mobile technology has been used by MEASURE Evaluation activities as data collection method for specific studies. Android tablets

were used to capture data for Priorities for Local AIDS Control Efforts (PLACE) study in the Dominican Republic. The use of the tablets provided an opportunity to capture sensitive data about sexual risk behaviors. This also made it possible to use Global Positioning System (GPS) tool to produce map where people meet sex partners within real-time. Tablets were also used in Liberia with the Lot Quality Assurance Sampling (LQAS) methodology for monitoring health outcomes of maternal and child health programmes.

“The first rule of any technology used in business is that automation applied to an efficient operation will magnify the efficiency. The second is that automation applied to an inefficient operation will magnify the inefficiency” (Bill Gates Quotes n.d). This attribute to how technology works to complement good systems. Technology has the prospective to change the effectiveness and usefulness of data collection and enhancing organizational assurance in M&E system.

## 2.6 CHALLENGES OF M&E SYSTEM

The design of an effective and efficient M&E system is easier said than done and even when well built, sustenance also becomes a challenge because it demands continues commitment, time, resources as well as favorable policy environment.

Budget, time and data collection are constraints associated with M&E, especially the evaluation process. For instance, the number of interviews, data collection (combination of qualitative and quantitative) approach, professional experience of the team and the type of analysis that could be conducted could be limited by budget constraint. Determining the life of M&E process, field work and time available for stakeholder’s feedback also have implications on M&E system for most NGOs (The World Bank, 2006).

According to Nyakundi (2014), workforce technical knowledge affect the execution of M&E system because needed capabilities and knowledge is vital in performing efficient guidance in the development of proper results-based performance M&E system. High demand for proficiency in M&E and emphasis on impacts, scholars had found out that there was inadequate M&E professionals in both government and NGOs (Rajalahti *et al.*, 2005). Also, a study by Wanjiku (2015) on government infrastructural projects in Kenya indicated that M&E expert lacked training in M&E design such as indicator setting, design of data collection instruments, collection skills and log frame design. Emmanuel (2015) indicated that there are basically insufficient people with needed skills and abilities for designing and executing M&E activities in Sub-Saharan African nations. For this reason, most NGOs lacked the necessary technical skills, knowledge and proper understanding of M&E system.

The development and expansion of technology to facilitate efficient data collection, analysis and reporting in all sectors in less developed countries is due to inadequate resources (Aranda-Jan *et al.*, 2014). The use of mobile technology could serve as an alternative that is affordable in most developing countries. The use of technology is becoming widespread in most developing countries due to the nearly 7 billion mobile phones subscriptions and an estimated 96 percent mobile penetration in the world in 2014 (ITU, 2014). This is encouraging to M&E system.

Public and private organizations in the developed world use electronic database for their M&E needs which automatically aggregate, analyze, report and send to responsible parties. Unfortunately, most M&E systems in developing countries like Ghana, seriously rely on paper based data approach for their M&E needs, with inherent challenges such as quality and timeliness. This system is complicated and therefore prevent accurate flow of data needed for M&E system improvement (MEASURE Evaluation Special Report, 2015).

## 2.7 CONCLUSION

According to Kothari (2000), literature review looks at the gaps and arguments that needs to be validated through research. The review of literature revealed that, designing M&E system needs a blend of blocks that complement each other to ensure well functional M&E system. It also indicated that there were a lot of challenges in designing and implementing M&E system. The review considered studies in relative to NGOs work, concept of M&E system, data quality and technology as well as challenges in M&E. None of the studies reviewed was done on the effects of technology on the performance of M&E system in NGO in Ghana. Furthermore, most of the studies reviewed were sector specific and thereby limiting the results for generalization. This study is therefore vital in addressing the knowledge gap.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 INTRODUCTION**

This chapter of the research described and justified the approaches and methods that was used in answering the research questions.

#### **3.1 RESEARCH DESIGN**

According to Krishnaswamy (2009), research design describes techniques that would be adopted to undertake the research study. This study adopted the survey research strategy. It used quantitative research methodology to collect all necessary primary data for better understanding of the M&E system, how technology affect data collection and quality and challenges of M&E system, and how it can be improved. The quantitative method was used because it provides data that can apply statistical test including descriptive analysis like mean and standard deviation in making statements about the data collected through questionnaire. This made it easy to drive important facts from the research data such as preference trends and demographics for decision making and generalization across groups of people.

#### **3.2 DATA SOURCE**

The main source of data for this study was primary data. The primary data was collected from the Monitoring and Evaluation Specialists and Programme Officers acting as M&E focal persons of NGOs in the Northern region. These are experts who understand the M&E system, have necessary experience and are in a better position to offer information necessary for the research. Data was collected on the type of technologies used for M&E system, effects of technology on data

collection and quality and challenges of M&E in local NGOs operating the Northern region of Ghana.

### 3.3 STUDY POPULATION

Sekaran and Bougie (2010) as cited by Nabulu (2015), defined population as the entire group of people the researcher intended to investigate. From this definition, a study population is the whole group of people, event or organizations the researcher studied or made assumptions about. It is from this population that the sample size for the research was drawn from. The targeted population were local NGOs operating in the Northern region irrespective of their area of operation. According to the Registrar General's database, there are a total of 113 registered local NGOs in the region.

### 3.4 SAMPLE SIZE

A sample size is a subset drawn from the targeted population to which the researcher wants to generalize the results. Any statement and conclusions made about this sample should be exact of the entire population (Orodho, 2002). The sample size was determined using Yamane (1967:886) simplified formula below.

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

Where n is the sample size

N is the population size

e is the level of precision

Using a precision of 0.1 (10%), confidence level of 95% and a population of 113 registered NGOs gave a sample size of 53. Using the systematic sampling technique, these 53 sampled NGOs were selected using an interval of two. This meant that from the starting point, every second NGO would be sampled for the study.

### 3.5 SAMPLING STRATEGY

The systematic random sampling approach was used to select NGOs for the research. The systematic random sampling approach was used because there was a detailed list of NGOs operating in the region from the Registrar General's department. To get the interval for selecting the NGOs to be interviewed, the 113 NGOs were divided by the sample size of 53 to get a fraction. This fraction was used as the constant interval between NGOs from the first NGO selected.

### 3.6 DATA COLLECTION METHODS AND TOOLS

The study made use of quantitative methods to collect data. A structured questionnaire was employed as the main tool to capture all necessary primary data on the effects of technology on the performance of M&E system from the sampled NGOs in the Northern region. Cooper and Schindler (2011) as cited by Violet and Esther (2015) indicated that, the questionnaire design defines the problem and the specific objectives of the study. Closed and open-ended questions were used to capture quantitative data. A 5-point Likert scale varying from 1 to 5 was used to rate respondents' agreement or disagreement where necessary. The Likert scale is used because it is considered more reliable.

The questionnaire was uploaded onto KoBoToolbox, an electronic data collection tool designed for easy and reliable data collection and analysis. It was used to allow completed survey instruments

to be sent via cellular or Wifi connections to a cloud storage database. The survey instrument was categorized into three sections to cover the research questions and objectives. The questionnaire was then sent via emails and WhatsApp to respondents to complete and submit.

The researcher also made use of secondary data. These data was collected from books, journals, reports, government policy documents, new letters among others. Secondary data was collected by desk review of wide literature on previous researches related to NGO work, technology, performance of monitoring and evaluation system, data collection and analysis. These data helped formed the theoretical foundation of this research.

### 3.7 RELIABILITY AND VALIDITY

To ensure reliability and validity, the questionnaire was given to my supervisor for ambiguous words and statements to be modified, reorganized and refined. All irrelevant items were also taken out based on supervisor's comments. The questionnaire was pre-tested with five respondents to determine its consistency of the items.

### 3.8 DATA ANALYSIS

Data analysis and interpretation was done using statistical tools. The data was collected using KoBoToolbox. KoBoToolbox is an electronic data collection tool design for easy and reliable data collection and analysis. It allows data to be sent via cellular or Wi-Fi connections to a cloud storage database. Based on the sample size, 53 questionnaires were deployed to respondents. The responses from respondents on technological tools used for M&E system and data collection, effects of technology on data collection and quality and challenges of M&E system of NGOs was exported into Microsoft Excel for data cleaning and then imported into Statistical Package for

Social Sciences (SPSS) for analysis. Analysis was done using descriptive statistics. Demographic data was analyzed using frequencies and percentages. Mean score ranking was used to analyze data for objective one and two where mean score within 1.00 to 2.50 ( $1.00 \leq \text{disagree} \leq 2.50$ ) was represented as disagree, mean score within 2.51 to 3.50 ( $2.51 \leq \text{not sure} \leq 3.50$ ) was represented by not sure and a score of 3.51 to 5.00 ( $3.51 \leq \text{agree} \leq 5.00$ ) was represented by agree based on the 5 point Likert scale. Relative Importance Index (RII) technique was used to analyze data for objective three to determine which of the challenges for both M&E system and technology were critical to be given the need attention in addressing it. The formula used in calculating the RII values for all the factors was  $RII = \Sigma W / (A * N)$ , where  $\Sigma W$  is the total sum of all the weight given to each factor or challenge by the respondents ranging from 1 being the lowest and 5 being the highest, A is the highest weight (in this case 5), and N is the total number of respondents (51) (IRJET, 2016). The higher the value of RII, the more critical the factor is. The RII was computed for each of the factors and ranked based on the RII value. Data generated for each objectives was summarized and presented in tables.

### 3.9 ETHICAL CONSIDERATION

According to Kumar (2005), it is wrong to collect data without the consent, willingness and awareness of the participants. Based on this, all participants were made aware that their participation was voluntary and therefore could withdraw from the study at any point and would not be obliged to respond to question or questions he or she felt uncomfortable. Respondents were informed of the length of time in completing the questionnaire.

Participants sign a consent form to indicate that they were in agreement to partake in the study before they can proceed to respond to the questionnaire. They were also assured of confidentiality

and anonymity throughout the study process that their identity as respondents and their organizations would not be published.

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND FINDINGS

#### 4.1 DEMOGRAPHIC CHARACTERISTICS

##### 4.1.1 Response Rate

Table 4.1 below shows the response rate after sending the URL link to 53 sampled respondents through electronic mail. Out of this, 51 respondents representing 96 percent completed and submitted their responses to the questionnaire. According to Davidoff (2000), the higher the response rate the better for research. That is, 80 percent would be good and 90 percent would be excellent. So this study response rate of 96 percent would be appropriate and its conclusions would be valid and reliable.

*Table 4.1: Response Rate*

<b>No of Questionnaires Distributed</b>	<b>No of Questionnaires Completed and Submitted</b>	<b>Response rate</b>
53	51	96%

*Source: Primary Data, 2018*

##### 4.1.2 Organization's Main Areas of Operation

Table 4.2 below shows the organization's main areas of operation. It was realized that most of the organizations in the Northern region were into education with 37.8 percent, followed by health with 33.3 percent, agriculture and governance 7.8 percent each. These organization also indicated that they had other minor areas of operation apart from these main areas. Therefore more organizations in education could be attributed to the low literacy rate in the Northern region as

stated in 2010 population census data that Northern region had the lowest literacy rate of 37.2 percent among the ten regions of Ghana.

*Table 4.2: Organization's Main Areas of Operation*

<b>Main Area of Operation</b>	<b>Frequency</b>	<b>Percent</b>
Agriculture	4	7.8
Education	19	37.3
Gender	1	2.0
Governance	4	7.8
Health	17	33.3
Others	3	5.9
Water and sanitation	3	5.9
<b>Total</b>	<b>51</b>	<b>100.0</b>

*Source: Primary Data, 2018*

#### **4.1.3 Sex of Respondents**

Table 4.3 indicates the sex of respondents representing the sex of M&E officers. Male's respondents were 86.3 percent whilst females were 13.7 percent. This therefore means that those who perform M&E roles and responsibilities in the NGOs are predominantly males. The Ghana Statistical Service National Employment Report (2015) indicated that 60.3 percent of work force in all sectors of the economy including NGOs were male's whilst 39.7 percent were females. This is in line with this findings that, male M&E officers were more than female M&E officers in the NGO sector in the Northern region.

*Table 4.3: Sex of Respondents*

<b>Sex</b>	<b>Frequency</b>	<b>Percent</b>
Female	7	13.7
Male	44	86.3
<b>Total</b>	<b>51</b>	<b>100.0</b>

*Source: Primary Data, 2018*

#### **4.1.4 Highest Level of Education**

Table 4.4 below indicate the educational level of respondents. Sixty-three (63.63) percent of respondents had Bachelor's degree, 23.53 percent of respondents had Master's degree and the least being Higher National Diploma with 7.84 percent. None of the respondents had PhD. This data implies that, the respondents have the required educational qualification to perform the require M&E roles and responsibilities in their organizations.

*Table 4.4: Highest Educational Level*

<b>Highest Educational Level</b>	<b>Frequency</b>	<b>Percent</b>
Bachelor	35	69.63
Higher National Diploma (HND)	4	7.84
Masters	12	23.53
PhD	0	0.00
<b>Total</b>	<b>51</b>	<b>100.0</b>

*Source: Primary Data, 2018*

#### 4.1.5 Position in the Organization

M&E specialists are ideal staff required to perform M&E functions in any organization. The table below indicates the category of staff that responded to the questionnaire as performing M&E roles. It shows that 74.5 percent of respondents were M&E officers, whilst 9.8 percent of respondents were recorded for both M&E specialists and project officers. Programme officers were the least with 5.9 percent.

*Table 4.5: Position in the Organization*

<b>Position in the Organization</b>	<b>Frequency</b>	<b>Percent</b>
M&E officer	38	74.5
M&E specialist	5	9.8
Programme officer	3	5.9
Project officer	5	9.8
<b>Total</b>	<b>51</b>	<b>100.0</b>

*Source: Primary Data, 2018*

This therefore implies that, most of the organizations do not have M&E specialist to manage their M&E systems. Though the M&E officers were excellent, they might be limited in performing certain tasks. This may be due to inadequate resources and funds to recruit M&E specialists since most of the organizations were local. Some organizations used programme or project officers as M&E focal persons which is not a good practice in ensuring effective and efficient M&E system.

#### 4.1.6 Length of Service in the Organization

Table 4.6 indicates the number of years respondents had worked in their organizations, providing M&E functions. Fifty-one (51.0) percent of the respondents indicated that they had worked

between 3 to 5 years; 27.5 percent worked for over 5 years and 21.5 percent worked below 3 years in the organizations. This therefore meant that most of the respondents had performed M&E roles and had gained a lot of knowledge and experience and would appreciate the effects of technology and challenges of M&E system in their organization. Hence they are in the best position to respond to the research questions.

*Table 4.6: Length of Service*

<b>Duration in Organization</b>	<b>Frequency</b>	<b>Percent</b>
1 to 3 years	11	21.5
Above 5 years	14	27.5
Between 3 to 5 years	26	51.0
<b>Total</b>	<b>51</b>	<b>100.0</b>

*Source: Primary Data, 2018*

## 4.2 TYPES OF TECHNOLOGIES USED BY LOCAL NGOS IN COLLECTING M&E DATA.

### 4.2.1 Monitoring and Evaluation System

A functional M&E system is one of the vital indicators to show if an organization had measures and procedures in place to measure its performance and provide necessary evidence of their achievement to both funders and key stakeholders. In finding out if the organizations had functional M&E system, all respondents indicated that their organizations had functional M&E system. This implied that all organizations had realized the importance and usefulness of M&E system. In accessing the effectiveness of their M&E system, 59 percent of respondents indicated that their M&E system was very effective, 29 percent of the respondents had their M&E system being effective whilst 12 percent indicated that their M&E system was ineffective. The reason for

ineffective M&E system was because 15 percent of the respondents indicated their organizations had no designated M&E specialist or officer to effectively design and implement M&E activities. The M&E system was mainly managed by programme and project officers as M&E focal persons. Another reason for the ineffectiveness was the fact that 7 percent of the respondents said that their organizations had no budget allocation for M&E activities even though this was insignificant to be generalized.

#### **4.2.2 Monitoring and Evaluation Tools**

NGOs in the development and implementation of their M&E system used different tools and techniques. Even though these tools and techniques were different, they complemented and substituted each other. This study accessed the basic M&E tools and techniques used by the organizations.

Using the mean score, strongly disagree and disagree with the usage of the tools were represented by 1.00 to 2.50 ( $1.00 \leq \text{disagree} \leq 2.50$ ). The score of not sure was between 2.51 and 3.50 ( $2.51 \leq \text{not sure} \leq 3.50$ ) and a score between 3.51 and 5.00 ( $3.51 \leq \text{agree} \leq 5.00$ ) was represented by agree.

The table below indicates that, the commonly used tool was Management Information System/database with a mean score of 4.57 and standard deviation of 0.640 followed by performance monitoring plan (4.33), indicator matrix (4.22), performance indicators (3.71) logical/results frameworks (3.51), were M&E tool respondents agreed with as frequently used because they were all rated above the mean 3.50. The least used tool were formal evaluation (3.25) and impact evaluation with a mean score of 3.24 because they had mean score below 3.5.

*Table 4.7: Monitoring and Evaluation Tools*

<b>M&amp;E Tools</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Management Information System/Database	4.57	0.640	1 <sup>st</sup>
Performance Monitoring Plan	4.33	0.841	2 <sup>nd</sup>
Indicator matrix	4.22	1.026	3 <sup>rd</sup>
Performance Indicators	3.71	1.285	4 <sup>th</sup>
Logical/Results framework	3.51	1.461	5 <sup>th</sup>
Formal Surveys	3.25	1.278	6 <sup>th</sup>
Impact evaluation	3.24	1.290	7 <sup>th</sup>

*Source: Primary Data, 2018*

It was realized from the analysis above in Table 4.7 that all the commonly used tools were employed to perform monitoring functions. This confirmed the fact that monitoring is a continuous activity such as database which are used frequently to collect and store programme or project data. The least tools were used for evaluation functions such as formal surveys and impact evaluation. This also confirmed that evaluation is a periodic activity and these tools were used periodically and done mostly by external evaluators. UNWFP (2002) and ACF (2011) outlined these tools as the core tools used in M&E system to help in planning, accountability and storage of documents and data.

#### **4.2.3 Identified Technologies for M&E**

The first objective was to identify the types of technological tools used by NGOs in performing their M&E functions. The focus was on digital data tools for surveys that feed into electronic databases for more reliable and faster data collection, transmission and analysis. This is because, quality data is one of the key determinants of an active M&E system, since both monitoring and

evaluation involves continuous data collection for management decisions-making, policy formulation, amongst others. Hence the need to confirm that the data gathered is of quality.

With reference to the mean score, strongly disagree and disagree were represented by least used within the range of 1.00 to 2.50 ( $1.00 \leq \text{least used} \leq 2.50$ ). The score of not sure was represented by moderately used 2.51 to 3.50 ( $2.51 \leq \text{moderately used} \leq 3.50$ ) and a mean score within 3.51 to 5.00 ( $3.51 \leq \text{frequently used} \leq 5.00$ ) for strongly agree and agree was represented by frequently used.

Table 4.8 below present selected types of technological tools used for electronic M&E data collection and analysis. From the table, it is observed that, Statistical Package for Social Sciences (SPSS) had a mean score of 4.86. Open Data Kit (ODK) had a mean score of 4.80, followed by KoBoToolbox with a mean of 3.94. Google Survey had a mean of 3.14; with Survey Monkey (2.47) and Global positioning System (GPS) (2.43). The least was SurveyShare with a mean score of 1.94.

*Table 4.8: Technological tools used for M&E data collection and analysis*

<b>Data collection and analysis tool</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Statistical Package for Social Sciences (SPSS)	4.86	0.348	1 <sup>st</sup>
Open Data Kit	4.80	0.664	2 <sup>nd</sup>
KoBoToolbox	3.94	1.515	3 <sup>rd</sup>
Google Survey	3.14	1.855	4 <sup>th</sup>
Survey Monkey	2.47	1.736	5 <sup>th</sup>
Global Positioning System (GPS)	2.43	1.578	6 <sup>th</sup>
Survey Share	1.94	1.475	7 <sup>th</sup>

*Source: Primary Data, 2018*

Using the scale, SPSS, ODK and KoBoToolbox had a mean score between 3.51 and 5.00. This meant that they were the frequently used technological tools by organizations within the study area for M&E system data collection and analysis. Google survey was within 2.51 to 3.50 with a score of 3.14, which meant that it was moderately used for M&E data collection. Survey Monkey, GPS and SurveyShare were the least used tools because their mean scores were comparatively low and ranged between 1.00 and 2.50.

#### 4.3 EFFECTS OF TECHNOLOGIES ON M&E WITH REGARDS TO DATA COLLECTION AND QUALITY.

##### 4.3.1 Effects of Technology on M&E System

Using the mean score, 1.00 to 2.50 ( $1.00 \leq \text{disagree} \leq 2.50$ ) meant they disagreed with the statement. A mean score between 2.51 to 3.50 ( $2.51 \leq \text{not sure} \leq 3.50$ ) meant not sure; and a mean score of 3.51 to 5.00 ( $3.51 \leq \text{agree} \leq 5.00$ ) meant the respondents agreed with the statement.

*Table 4.9: Effects of Technology on M&E System*

<b>Effects of Technology on M&amp;E system</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Validation checks improves data quality	4.41	0.726	1 <sup>st</sup>
Help in real time data from point of collection	4.31	0.707	2 <sup>nd</sup>
Able to analyze large amounts of data	4.29	0.832	3 <sup>rd</sup>
Ability to collect new types of data eg location, pictures	4.16	0.946	4 <sup>th</sup>
Cost effective over time	4.10	0.922	5 <sup>th</sup>

*Source: Primary Data, 2018*

It was observed from the table 4.9 that all the effects had a mean score within the range of 3.51 and 5.00, represented by agree and strongly agree. Among the effects, validation checks improves

data quality had the highest mean of 4.41; and cost effectiveness over time had the least mean of 4.10 even though all had mean score above 3.51.

With increasing emphasis on real-time feedback, more rigorous data collection, and quantifiable results, the spread and use of technologies in M&E clearly indicates that there are great advantages such as saving money, adding value and impact to your project, and gaining insights to improve the project's future. This therefore meant that the use of technology had positive effect on M&E system in the organizations.

#### **4.3.2 Effect of Technology on Data Collection**

Apart from determining the effects of technology on M&E system, the study also determined the effect of technology on data collection. Using a five-point Likert scale, respondents were asked to indicate the rate at which they disagree or agree with the list of effect of technology on data collection in their organization. Using the mean score, strongly disagree and disagree were represented by 1.00 to 2.50 ( $1.00 \leq \text{disagree} \leq 2.50$ ). The score of not sure was 2.51 to 3.50 ( $2.51 \leq \text{not sure} \leq 3.50$ ) and a score of 3.51 to 5.00 ( $3.51 \leq \text{agree} \leq 5.00$ ) was represented by agree. Table 4.10 below indicates the results.

From the results below, it is clear that all the effects of technology enumerated had mean scores within range of agree and strongly agree. Among these effects, Field level checks on quality incorporated had the uppermost mean score of 4.71. This shows the effects of technology on data collection because technology helps incorporate validation checks to ensure data quality than paper-based data collection. The second highest effect of technology on data collection was improved monitoring (because of real time tracking, GPS, time, date) and ease for verification and integration with a mean score of 4.59 each. Limited errors based on in-built logic had a mean of

4.55, Tracked in real time (4.53), deployed remotely (4.51), increase speed (4.24), improve transparency (4.22), accessibility and flexibility had the least mean score of 4.18 each.

*Table 4.10: Effect of Technology on Data Collection*

<b>Effects of technology on data collection</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Field level checks on quality incorporated	4.71	0.460	1 <sup>st</sup>
Improve monitoring (real time tracking, GPS, time, date)	4.59	0.606	2 <sup>nd</sup>
Easy for verification and integration	4.59	0.606	2 <sup>nd</sup>
Limited errors based on in-built logic	4.55	0.541	3 <sup>rd</sup>
Tracked in real time	4.53	0.612	4 <sup>th</sup>
Deployed remotely	4.51	0.703	5 <sup>th</sup>
Increase speed	4.24	0.513	6 <sup>th</sup>
Improve transparency	4.22	0.503	7 <sup>th</sup>
Accessibility	4.18	0.684	8 <sup>th</sup>
Flexibility	4.18	0.684	8 <sup>th</sup>

*Source: Primary Data, 2018*

According to Mike (2005), the use of technology in survey research is having intense effect on survey data collection. These technologies present several opportunities to improve survey data collection, increase the way we can interact with survey respondents and expanding the range of stimulus material that can be used. These results therefore indicate that technology also has positive effects on M&E data collection.

### 4.3.3 Effects of Technology on Data Quality

The study also determined how technology affect data quality using the five key data quality criteria (precision, validity, timelines, reliability and integrity). A mean score within 1.00 to 2.50 ( $1.00 \leq \text{disagree} \leq 2.50$ ) was represented by strongly disagree and disagree. A score within 2.51 to 3.50 ( $2.51 \leq \text{not sure} \leq 3.50$ ) was referred to as not sure and a score within 3.51 to 5.00 ( $3.51 \leq \text{agree} \leq 5.00$ ) was represented by agree and strongly agree.

The results from table 4.11 shows that technology had greatest effect on timeliness with a mean score of 4.76. It means that technology makes data available timely enough to influence management decision. This is because it enables real time data transmission from the field.

*Table 4.11: Effects of Technology on Data Quality*

<b>Effects of technology on data quality</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Rank</b>
Data collected using technology is available at a useful frequency, current and timely enough to influence management decision making (Timeliness)	4.76	0.428	1 <sup>st</sup>
Data collected using technology tools are safeguard to minimize the risk of transcription errors or data manipulation (Integrity)	4.71	0.460	2 <sup>nd</sup>
Data collected using technology tools clearly and adequately represent the intended results (Validity)	4.67	0.516	3 <sup>rd</sup>
Data collected using technology tools reflect stable and consistent data collection processes and analysis methods overtime (reliability)	4.59	0.606	4 <sup>th</sup>
Data collected using technology tools have sufficient level of details to permit management decision making (Precision)	4.51	0.703	5 <sup>th</sup>

*Source: Primary Data, 2018*

Integrity was the next data quality criteria to be affected positively by technology with a mean score of 4.71. Validity had a mean score of 4.67 because technology enabled data clarity and adequately represented intended results. Reliability had a score of 4.59 and precision had the same mean score of 4.51. This therefore indicated that the use of technology had positive effects on all the five key data quality criteria and hence had effect on data quality.

The above findings are in line with MEASURE Evaluation (2017) which shows that, data quality assessment remains an integral part of M&E frameworks developed to manage the performance of programs towards impact. This is supported by Chen *et al.* (2014), which indicates that effective data quality assessment and quality of data are essential for assessing the outcomes of developmental interventions. They further stressed that timeliness, precision, completeness, and accuracy are the most frequent attributes of data quality. The researcher therefore concludes that, the use of technology has effect on M&E data quality.

#### **4.3.4 Uses of Technology Enabled Data**

The study also sought to find out what the quality data collected through technology was used for. Using multiple responses, respondents were asked to indicate what they use technology enabled quality data for. It was indicated that quality data was used mainly for decision making (20.7%). Respondents indicated that, data collected through technology were used to inform management decisions. This also informed management in their planning (15.6%) and budgeting/resource allocation (16.8%). Monitoring data collected using technology help management on scheduling (10.1%) of project activities. Respondents (12.9%) also indicated that technology enabled data was used for impact evaluation of their intervention. According to 5.9% of the respondents, their organization use technology enabled data to inform policy formulation. It was also realized that technology was used to share information with stakeholders (18.0%). The organizations used

quality data mostly for decision making and the least used was policy formulation as showed in Table 4.12 below.

*Table 4.12: Uses of Technology Enable Data*

<b>Use of Data</b>	<b>Percent</b>
Decision making	20.7
Planning	15.6
Budgeting/resources allocation	16.8
Impact evaluation	12.9
Scheduling	10.1
Information sharing with stakeholders	18.0
Policy formulation	5.9
<b>Total</b>	<b>100.0</b>

*Source: Primary Data, 2018*

#### 4.4 CHALLENGES WITH TECHNOLOGY AND M&E FACED BY NGOS

##### 4.4.1 Challenges of Technology on Data Collection and Quality

The third objective was to identify the challenges associated with the use of technology and M&E system. Respondents rated the extent to which they agree or disagree with the challenges confronting their organizational M&E system and the use of technology in data collection and analysis. Analysis was done using the Relative Importance Index techniques with a five point scale from 1 to 5. The higher the value of RII, the more critical the factors or challenges is. The RII was computed for each of the challenges and ranked based on the RII value. From the ranking of the

challenges, it was possible to identify the most critical challenge using technology in data collection and quality.

Using RII, it was observed that, all respondents agreed to the facts that these were the main challenges of using technology for M&E data collection and analysis as indicated in Table 4.13 where all the challenges of technology in M&E data collection, analysis and quality had RII values closed to 1. Even though all these were major challenges, respondents indicated that the greatest challenge of using technological tools for data collection was limited or no network with RII value of 0.901. This is because mobile network service can be uneven and can sometimes be disrupted. Also connection problem between urban and rural areas are uneven and sometimes no network in some rural areas.

Next challenge was constant power supply with RII value of 0.898 followed by security risk with 0.890 as RII value. This could be security risk to both the organization and the individual. Risk to the organization when publicizing feedback and calling large number of people increases the risk of interception by third parties such as foreign and international intelligence, non-state actors among others. To the individual, phone call or data traffic can be intercepted and feedback messages can be read by a third party who gain physical access to the phone. Where sensitive personal information is shared can threaten lives or stigmatization. Also in some local community authorities and people are skeptical of some devices such as GPS which can record location information. This can also present security threat to the enumerators.

Inadequate capacity and skills to use these technological tools and software's was also identified with 0.843 as RII value. This is because some staff, supervisors and enumerators have limited

experience and expertise in using some digital devices. This can affect the kind of data or information collected.

It was also observed that, in the case of online survey, not every provider of M&E information had access to phone or technology that could be used to provide needed feedback. Also literacy level of the provider of M&E data through technology can lead to biasness because not everyone can read and write to provide the necessary data consequently leading to biasness with RII value of 0.831.

The least among the challenges was limited face-to-face interactions especially (online surveys) with 0.756 as RII value. This is because technology cannot replace the quality of direct, face-to-face interaction with M&E data providers. This can be problematic in building trust.

Singh *et al.*, (2009) noted that NGOs who had used technological tools in data collection highlighted difficulties with the infrastructure and maintenance which buttressed the challenge of inadequate capacity, skills and experience.

*Table 4.13: Challenges of Technology on Data Collection and Quality*

<b>Challenges of technological tools on data collection and quality</b>	<b>RII Value</b>	<b>Rank</b>
Limited or no network	0.901	1 <sup>st</sup>
Power outage (electricity)	0.898	2 <sup>nd</sup>
Security risk	0.890	3 <sup>rd</sup>
Inadequate capacity, skills and experience	0.843	4 <sup>th</sup>
Bias: uneven usage of phone	0.831	5 <sup>th</sup>
Distance/Limit face-to-face interaction	0.756	6 <sup>th</sup>

*Source: Primary Data, 2018*

#### **4.4.2 Challenges of M&E System**

RII was computed for each of the challenges of M&E system and ranked based on the RII value computed. Based on ranking the challenges, it was possible to identify the most critical challenge of M&E system in local organizations in the Northern region of Ghana.

Table 4.14 shows the challenges of M&E system in local organizations. It was realized that the main challenge was inadequate budget allocation to implement M&E activities with RII value of 0.933. Even though it is required that 10 percent of project cost should be allocated for M&E activities, not all the 10 percent end up being used for M&E activities. Also, management's non-commitment to M&E activities was observed as a major concern with 0.878 as RII value and ranked second. This was because management did not give priority to M&E activities in terms of allocating funds and recruiting experts to design and implement M&E systems. The third ranked critical challenge was less involvement of stakeholders in M&E design and implementation with RII value of 0.831. Inadequate M&E experts was also identified as the fourth major challenge of M&E system with 0.827 as RII value. As indicated earlier under the positions of respondents, it was realized that 74.5 percent of the M&E staff were officers with only 9 percent being specialists. Failure in evaluation design was also identified as a challenge to M&E system with 0.823 as RII value and rank 5<sup>th</sup>. This was due to the inadequacy of M&E experts to design and conduct programme evaluations. Inadequate technology to support in storage of monitoring and evaluation data was also a challenge to M&E system in the organizations, with RII value of 0.815. This was because most of these technological tools were costly and needed some level of training and skills to be used effectively and efficiently. The least among the challenges was failure in selecting the right indicators for monitoring performance, with RII of 0.796 and ranked 7<sup>th</sup>. This was also due to the fact that experienced M&E specialists are needed to be able to identify the right indicators

for measuring programmes and project goals and objectives. In general, it was realized that all respondents agreed with these challenges of M&E system in their organizations as they all have RII values closed to 1.

*Table 4.14: Challenges of Monitoring and Evaluation System*

<b>Challenges of M&amp;E system</b>	<b>RII Value</b>	<b>Rank</b>
Inadequate budget allocation	0.933	1 <sup>st</sup>
Uncommitted management	0.878	2 <sup>nd</sup>
Less involvement of stakeholders	0.831	3 <sup>rd</sup>
Inadequate M&E experts	0.827	4 <sup>th</sup>
Failure in evaluation design	0.823	5 <sup>th</sup>
Lack of appropriate technology for storage	0.815	6 <sup>th</sup>
Failure in selecting the correct indicators	0.796	7 <sup>th</sup>

*Source: Primary Data, 2018*

A study conducted by Ernest (2015) on streamlining monitoring and evaluation systems in managing social development interventions on Ahafo Mine Areas Livelihood Programmes noted that the Agriculture Improvement and Land Access Programme (AILAP) and Vulnerable People’s Programme (VPP) did not have elaborated budget and M&E personnel specifically for M&E activities which is not different from the above challenges identified.

A study on exploring the history and challenges of M&E in international Non-Governmental Organizations by Scott (2013) indicated budget constraints, where organizational SOP designated only 3 – 4% of programme budget for evaluation efforts. It was also indicated that some of the country offices did not have M&E officers. Furthermore, although M&E policies and guidelines were evidently documented but country level staff could not efficiently and effectively apply the

guidance and this was in relation to the failure in evaluation design, failure in selecting right indicators, inadequate M&E experts, and inadequate financial resources findings of this study. This results agrees with findings by Emmanuel (2015) which shows inadequate expertise in M&E both in government and NGO staff with the necessary skills and capacity of designing and implementing M&E activities. Nyakundi (2014) also found out that experts technical skills affect the execution of M&E system, in that needed skills play a key role in providing functional advice in the development of appropriate results-based performance monitoring systems. It therefore means that, with competent M&E experts with the needed skills, projects are able to achieve their planned results.

Also Obure (2008) identified post data collection management weakness in M&E system ascending from the incapability to handle and process data in a meaningful way with storage.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 INTRODUCTION**

This study assessed the effects of technology on the performance of M&E system in NGOs in Ghana. This chapter of the study therefore presents summary of key findings, conclusions, recommendations and gives suggestions to guide further studies.

#### **5.1 SUMMARY OF KEY FINDINGS**

The objectives of this study were to identify the type of technological tools used for M&E data collections, effects of technology on M&E data collection and quality, and challenges of technology and M&E system faced by local NGOs. The key findings under these objectives are presented below.

##### **5.1.1 Types of Technologies Used in Collecting M&E Data**

The Non-Governmental Organizations have seen the need for M&E system in measuring performance and evaluating the impacts of their interventions, and have therefore set up functional M&E systems. However, this functional M&E systems were faced with challenges of budget allocation and inadequate M&E experts/specialists to design and implement M&E system.

It was identified that in carrying out their M&E functions successfully, they used M&E tools and processes which complemented each other on regular basis. Monitoring tools were frequently used than evaluation tools. This confirmed the fact that monitoring is a routine activity whilst evaluation is a periodic activity.

Local Non-Governmental Organizations use technology tools such as SPSS, ODK, KoBoToolbox, Google Survey, and Survey Monkey in collecting their monitoring and evaluation data that help management in decision-making, planning, budgeting, and policy formulation, scheduling, monitoring of performance, and evaluating impacts of their interventions.

### **5.1.2 Effect of Technologies on M&E Data Collection and Quality**

Local NGOs used technology in their routine data collection from primary sources. Also the data collected for project purposes were analyzed mainly through technology or software's.

The use of technology had positive effect on M&E system in the organizations. The use of technology made it easy to collect and transmit monitoring and evaluation data in real time, able to collect new type of data such as GPS location for maps, cost effective over time because it cut off travel time and cost to monitor data collection due to real time transmission. It was able to analyze large amount of project data as well as improve data quality due to the validation checks at field level.

Technology had positive effect on data collections. The use of technology in terms of M&E data collection improves transparency and flexibility. Also, it incorporate field level checks and limits errors due to in-built logic. The use of technology in data collection also help improve monitoring because of the real time transmission of data, time, date and GPS locations.

The use of technology also had positive effect on quality of data produced for monitoring and evaluation purposes in the NGOs. In reference to the five data quality criteria (precision, validity, timeliness, reliability and integrity), the use of technology had positive effects on all these data quality criteria's. The greatest effect was on timeliness and integrity because it collects and

transmits data in a timely manner to influence management decision and minimize the risk of transcription errors or data manipulation respectively.

### **5.1.3 Challenges with Technology and M&E faced by NGOs**

In terms of challenges faced in relation to the use of technology, it was indicated that limited or no network could defeat the real time transmission of data because some of the tools used needed constant connection to the internet to be able to transmit field data.

The digital devices like smart phones and tablets used for surveys depended on power supply (electricity). Some of these devices' batteries could not withstand throughout the day in the field. This could slow down work, and subsequently increase cost.

There was also security risk associated with the use of technology as this could be affected by computer security attack and unintentional mishandling which could have implications on confidentiality and integrity.

Inadequate capacity and skills in the use of these technological tools and software's was also identified as a challenge.

It was also mentioned that, not every provider of M&E information use phones or technology that can be used to provide M&E feedback in the case of online survey hence could lead to biasness.

The use of technology, such as the online surveys, limited face-to-face interactions and cannot be suitable for all surveys especially those that involve observations.

M&E systems in local NGOs faced some challenges in its effective and efficient function. Some of the organizations did not have budget allocation for M&E activities. Even for those

organizations that had budget allocation, it was inadequate to conduct comprehensive M&E activities.

Also management gave little attention or low priority to M&E activities in terms of allocating funds and recruiting experts to design and implement M&E systems. This led to inadequate M&E experts who could identify the right indicators for monitoring performance and evaluation of intervention impacts.

Also inadequate technology for storing monitoring and evaluation data was a challenge to M&E system in the organizations. This was because most of these technological tools like servers are costly and needs some level of training and skills.

## 5.2 CONCLUSIONS

### **5.2.1 Types of Technologies Used in Collecting M&E data**

M&E system is the combination of different but interrelated tools (logical framework, performance monitoring plan, performance indicators, database, surveys and impact evaluations) that are used to complement and substitute each other in the design and implementation of the system. Management need to prioritize M&E system and incorporate it in to programme or project design from the inception and through the other stages of the project life cycle. The integration of effective M&E system on development intervention would help improve programme design and implementation.

The study concludes that, the technological tools identified for monitoring and evaluation data collection and analysis have a positive relationship with the performance of M&E system in local NGOs. It is very useful in that it helps management to generate reliable information in a timely

manner to influence decision, planning, budget, scheduling and impact evaluation, among others which are expected to improve organizational performance.

### **5.2.2 Effect of Technologies on M&E Data Collection and Quality**

The use of technological tools inform managers on what projects or programmes were successful, those that were not, and why, based on the outcome information available. Information provided by evaluation also inform managers as to whether to expend, redesign or drop the initiative based on the results of impact. To achieve the above, there is the need to ensure that, data provided to management was of good quality in terms of precision, validity, integrity, timeliness and reliability.

The study therefore concludes that, the use of technology had positive correlation with M&E data collection and quality in local NGOs. This is because the use of technology had positive effects in terms of timeliness (tracked in real time), integrity (validation checks and in-built logic reduce data transmission errors), and reliability (reflect constant and stable processes of data collection analysis methods overtime). The use of technology also increases speed, flexibility, improve monitoring and transparency, among others in data collection.

### **5.2.3 Challenges with Technology and M&E Faced by NGOs**

The study concludes under this objective that, M&E system is a complex system and no organization can effectively and efficiently design and implement M&E system without challenges. In the same way there is no technology without challenges in its usage.

## 5.3 RECOMMENDATIONS

Based on the findings and conclusions above, these recommendation are made under each objective.

### **5.3.1 Types of Technologies Used in Collecting M&E Data**

The study recommend that, local NGOs should integrate M&E system into the development of their programmes and projects from inception to the closing stages of their project life cycle. Necessary organizational policies and Standard Operating Procedures (SOPs) should be formulated and enforced for proper integration of M&E system and technology in the organizations.

### **5.3.2 Effect of Technologies on M&E Data Collection and Quality**

The study recommend that appropriate and cost effective modern technology for M&E data analysis and storage such as electronic data collection system and online database like servers, dropbox should be considered and integrated into their organizational M&E systems to help improve data quality.

### **5.3.3 Challenges with Technology and M&E Faced by NGOs**

It is recommended that, with human, budgetary and material resource allocation for M&E activities with the support of necessary SOPs would help address the challenges of M&E system. It is also recommended that local NGOs should use electronic data collection tools that are secure and support offline data collection.

#### 5.4 LIMITATION OF THE STUDY

The main limitation of this research is that the researcher could not cover all local NGOs in the other nine regions of Ghana. This influenced the sample size thereby limiting the study to only local NGOs in the Northern region. For this reason the results cannot be generalized for the entire nation. Sharing time with family, employment and research was a challenge.

#### 5.5 SUGGESTIONS FOR FURTHER RESEARCH

Further research can be done on the effects of technology on performance of M&E system and data quality considering the international Non-Governmental Organizations in Ghana; since this study was on effects of technology on performance of M&E system in local NGOs.

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## **APPENDIX A: QUESTIONNAIRE**

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI**

**INSTITUTE OF DISTANCE LEARNING**

**MSC. PROJECT MANAGEMENT**

**QUESTIONNAIRE ADMINISTRATION**

### **RESEARCH TOPIC:**

**ASSESSING THE EFFECTS OF TECHNOLOGY ON THE PERFORMANCE OF  
MONITORING AND EVALUATION SYSTEM IN NON-GOVERNMENTAL  
ORGANIZATIONS IN GHANA.**

### **INTRODUCTION**

I am Samuel Fant Kombian, a student of Kwame Nkrumah University of Science and Technology, Kumasi, pursuing Master of Science in Project Management. I am currently conducting my study on the effects of technology on the performance on monitoring and evaluation in Non-Governmental Organizations in Ghana as part of the university requirement. I am kindly requesting to participate by responding to the questions. Your response are very important to the success of this study. All information you provide would be used purely for academic purposes and treated with outmost confidentiality.

## SECTION A: BACKGROUND/DEMOGRAPHIC INFORMATION

1. What is the name of your organization?

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2. What is your organization's main area of operation?

- 1. Health ( )
- 2. Education ( )
- 3. Agriculture ( )
- 4. Water and sanitation ( )
- 5. Governance ( )
- 6. Gender ( )
- 7. Others specify

3. What is your sex?

- 1. Male ( )
- 2. Female ( )

4. What is your highest level of education?

- 1. Higher National Diploma (HND) ( )
- 2. Bachelor ( )
- 3. Masters ( )
- 4. PhD ( )
- 5. Others specify \_\_\_\_\_

5. What is your position in the organization?

- 1. M&E specialist ( )
- 2. M&E officer ( )
- 3. Programme officer ( )
- 4. Project officer ( )

6. How long have you worked in this position in the organization?

- 1. Less than 1 year ( )
- 2. 1 to 3 years ( )
- 3. Between 3 to 5 years ( )
- 4. Above 5 years ( )

## **SECTION B: M&E SYSTEM AND TECHNOLOGY TOOLS**

7. Does your organization have an M&E system?

- 1. Yes ( )
- 2. No ( )

8. How would you rate the effectiveness of your organization's M&E system?

- 1. Very ineffective ( )
- 2. Ineffective ( )
- 3. Not sure ( )
- 4. Effective ( )
- 5. Very effective ( )

9. Are there staff responsible for implementing M&E activities?

1. Yes ( )

2. No ( )

10. If yes, how many are they?

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11. Are these staff adequate to perform M&E activities of your organization?

1. Yes ( )

2. No ( )

12. Do the staff have the requisite skills and knowledge to conduct M&E activities?

1. Yes ( )

2. No ( )

13. Do you have a specific budget for undertaking M&E activities?

1. Yes ( )

2. No ( )

14. If no, how is M&E activities within organization funded?

15. What are the tools used for M&E activities in your organization? ***Please indicate the extent to which you agree or disagree with the usage of the following M&E tools in your organization where 1 is strongly disagree and 5 being strongly agree.***

M&E Tools	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
Logical/Results framework					
Performance indicators					
Impact evaluation					
Formal survey					
Management Information System (MIS)/ Database					
Indicator matrix					
Performance Monitoring Plan (PMP)					
Others specify					

16. Do you use any form of technology in your organization for M&E data collection and analysis?

- 1. Yes ( )
- 2. No ( )

17. If yes, what are these technological tools? *Please scale the following tools based on your level of usage where 1 strongly disagree and 5 is strongly agree.*

Technological tools for M&E	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
Global positioning system (GPS)					
Survey Money					
Google Surveys					
Open Data Kit					
Survey Share					
KoBoToolBox					
Statistical Package for Social Scientist (SPSS)					

18. If no, why don't you use technological tools?

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19. Can you use these technological tools for M&E activities?

1. Yes ( )

2. No ( )

20. Are these technological tools effective for M&E system?

1. Yes ( )

2. No ( )

21. If yes, how effective are these technological tools to M&E system in your organization?

*Please scale the following based on level of effect where 1 is the least and 5 being the highest.*

Effect of technological tools on M&E system	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
Help in real time data from point of collection					
Validation checks improves data quality					
Ability to collect new types of data eg location, pictures					
Cost effective over time					
Able to analyze large amounts of data					

22. If no, why are these technologies not effective to M&E system?

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23. What are the challenges with these technology tools?

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### **SECTION C: TECHNOLOGY AND DATA QUALITY**

24. Do you have technological tools for data collection, processing, analysis and reporting?

1. Yes ( )
2. No ( )

25. Do these tools capture all the relevant information on your projects?

1. Yes ( )
2. No ( )

26. Is there database to frequently store and retrieve data when needed?

1. Yes ( )
2. No ( )

27. How does technology affect M&E data collection? *Please scale the following effect of technology on data collection where 1 is strongly disagree and 5 being strongly agree.*

Effect of technology on data quality	Strongly disagree	Disagree	Not sure	Agree	Strongly Agree
Increase speed					
Improve transparency					
Accessibility					
Flexibility					
Field level checks on quality incorporated					
Deployed remotely					
Tracked in real time					
Limited errors based on in-built logic					
Improve monitoring (real time tracking, GPS, time, date)					
Easy for verification and integration					

28. Kindly indicate the extent to which you agree or disagree with the following data quality criteria *where 1 is strongly disagree and 5 being strongly agree.*

Factor of data quality	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Data collected using technology tools clearly and adequately represent the intended results (Validity)					
Data collected using technology tools reflect stable and consistent data collection processes and analysis methods overtime (reliability)					
Data collected using technology tools have sufficient level of details to permit management decision making (Precision)					
Data collected using technology tools are safeguard to minimize the risk of transcription errors or data manipulation (Integrity)					
Data collected using technology is available at a useful frequency, current and timely enough to influence management decision making (Timeliness)					
Technology has effect on M&E data quality?					

29. What do management use technology enabled data quality for?

- 1. Decision making ( )
- 2. Planning ( )
- 3. Budgeting ( )
- 4. Scheduling ( )
- 5. Allocation of resource ( )
- 6. Others specify \_\_\_\_\_

**SECTION D: CHALLENGES OF TECHNOLOGY AND M&E SYSTEM IN NGO's**

30. What are the challenges of technology on data collection and quality? *Please scale the following challenges of technology where 1 is strongly disagree and 5 is strongly agree.*

Challenge of data collection technology	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Bias: uneven usage of phone					
Distance / Limit face to face interaction					
Limited or no network					
Security risk					
Power outage(electricity)					
Inadequate capacity and experience					

31. How can these challenges be addressed?

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32. Do you have challenges using M&E system in your organization?

1. Yes ( )

2. No ( )

33. If yes, kindly indicate the extent to which you agree or disagree with the following possible challenges of M&E system in organization? *Where 1 is strongly disagree and 5 being strongly agree.*

No.	Possible challenges	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	Inadequate budget allocation					
2	Inadequate M&E experts					
3	Uncommitted management					
4	Less involvement of stakeholders					
5	Failure in selecting the correct indicators					
6	Failure in evaluation design					
4	Lack of appropriate technology for storage					
8	Others specify					

34. If yes, kindly indicate the extent to which you agree or disagree with the following possible recommendations for improving M&E system in organization? *Where 1 is strongly disagree and 5 being strongly agree.*

No.	Possible recommendations	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
1	Adequate financial resources					
2	Employ M&E experts					
3	Management should be committed to M&E					
4	Active involvement of stakeholders					
5	Select right indicators					
6	Proper evaluation design					
7	Provide appropriate technology					
8	Others specify					

END

THANK YOU FOR YOUR RESPONSE