Determinants of the Monitoring and Evaluations Practices of Development Projects: The Case of National Biogas Program of Ethiopia

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Abstract

This study examines the determinants of the effectiveness of government development project monitoring and evaluation. The descriptive and explanatory research designs were used in the study, there are approximately 110 NBPE employees, and the research is conducted using a census survey method. A total of 76 respondents were chosen. 11 program managers/coordinators, 31 engineers/technicians, 28 senior staff members (private sector developer, general support officer, finance officer, promotion/value chain officer), and 2 M&E experts are surveyed for this investigation. The descriptive statistics used in the study were generated using Statistical Packages for Social Sciences (SPSS) version 21. Information was presented in the form of tables, figures, and graphs. The study discovered that stakeholder participation, staff handling competence, organizational leadership, budgetary allocation, and technology utilization n/development to M&E systems all have a positive and significant impact on the effectiveness of the M&E system in NBPE, and the study discovered that all variables have a positive and significant impact on the effectiveness of the M&E system in NBPE. Staff competency and organizational leadership were found to have the greatest impact on the effectiveness of NBPE M&E practice for government development organizations, followed by stakeholder participation and technology development and utilization. The study also discovered that stakeholder participation, organizational leadership, and technology development and utilization have a significant impact on the effectiveness of project monitoring and evaluation. Finally, the study suggests that orienting and training middle management for M&E functions, as well as rotating them into different jobs, should be part of the organization's human resource development policy.

Keywords: *M&E practice, Determinants, Effective Monitoring & Evaluations, Ethiopia*

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1. BACKGROUND OF THE STUDY

It has been noticed and used by organizations for monitoring and evaluating projects for decades. The European Union, the United Nations, the World Bank and other development banks, M&E is embedded in their organizational processes (Kusek & Rist, 2004). Several other organizations working in different communities adopted a results-oriented approach to its work in order to keep track of progress on its strategic programs and the corresponding outcomes and impacts (International Federation of Red Cross and Red Crescent Societies, 2011), as well as to meet the increasingly rigorous requirements of their various donors and partners as noted by Jeremiah and Kabeyi (2019)

Monitoring and Evaluation is a key management tool that helps the national biogas program of Ethiopia to move in the right direction to achieve its goals if it is used as the core the project implementation (Vivid Economics, 2011) (AfDB, 2011). Available evidence illustrates that the progress of the programs with respect to the target plan, National and Regional biogas program coordination offices perform their monitoring and evaluations exercise with less effective way in order to achieve its milestone. There is also monitoring meeting conducted at national level including NBPE semi-annual performance review meetings of the Program Implementation Unit -Steering Committee joint performance evaluation meetings (Kusek & Rist, 2004). Moreover, Monitoring meetings and field visits were regularly made at all level.

Monitoring and evaluation (M&E) is valuable aspect to all projects and programs, whether it is big or small, because it helps in identifying project areas that are on target and those that need to be adjusted or replaced. M&E also facilitates learning and knowledge generation through the analysis and objective feedback of lessons from development experience (International Federation of Red Cross and Red Crescent Societies, 2011). Good M&E system is a source of knowledge capital. It enables governments and organizations to develop a knowledge base of the types of projects, programs, and policies that are successful, and, more generally, what works, what does not, and why. It can also provide continuous feedback in the management process of monitoring and evaluating progress toward a given goal (Kusek & Rist, 2004). According to (Hlatshwayo & Govender, 2015) monitoring and evaluation is more than accountability, control measures and assessment of results. Rather, it includes additional purposes such as learning, programme improvement, future planning and augments capacity.

Monitoring and evaluation is becoming increasingly important for many development organizations, both government and non-government. It enables those involved in development activities to learn from their mistakes, achieve better results, and be more accountable for long-term sustainability. M&E processes enable those involved to assess the impact of a specific activity, determine how it could be improved, and demonstrate what action is being taken by various stakeholders. This should result in a more efficient and transparent working environment (Robison, 2017). The national biogas program of Ethiopia is intended to start kind tools which are also technology based to improve the of monitoring and evaluation practice till the sustainability of the biogas of plant even at phase out the programs which is a new database in which the data of new biogas plants registered through mobile phone (World Bank, 2006). Some Smart Mobile phones are purchased for this purpose. The program technicians and biogas engineers of regional program coordination offices are supposed to collect the data at site. At the beginning of the exercise ABPP is expected to train (already promised to) all the program technicians and demonstrate in the field. Coding is made on wet cement and some facilities such as guarantee certificates also started to use in that year. There are also other tools which called a Customer Service Centre which is started in the end of 2018 and used for the functionality follow up and triangulation of the database information and for other data analysis for enhancing the monitoring and evaluation practice till the substantiality of projects through making ownership to the community (Vivid Economics, 2011). The program coordinators, the monitoring officer, the biogas engineers and technicians have been frequently visiting the CSC reports and chatting on it to take proper action.

It would be difficult to know whether the intended results are being achieved as planned in the absence of effective monitoring and evaluation, what corrective action may be required to ensure delivery of the intended results, and whether initiatives are making positive contributions to human development. (Kioko, 2017). According to Ethiopia Country Program Evaluation [ECPE] (2010), in Ethiopia, most of the organizations whether governmental and non-governmental do not use monitoring and evaluation systems as priority level and/or in appropriate manner for their projects and programmes. Existing assessment of monitoring and evaluation capacity in Ethiopia reveal gaps in both institutional and individual skills development for M&E according to a report on capacity building in Africa (Ethiopia) by Robison (2017).

The Government of Ethiopia has been developing different programs and projects to reduce the energy Poverty at the grass root level in order to solve the cooking energy problem in the rural and urban area. The country is still experiencing coordination and harmonization difficulties with respect to monitoring and evaluation practice with respect to attaining the primary objectivity of the projects which leads to attention might be given to the factors which is affecting the effectiveness of monitoring & evaluations These are key elements that are responsible for the outcomes of another element that have been inherently interlinked. The independent variables selected in the research study included, namely; stakeholder participations, budgetary allocations, organizational leadership, competence of the staff handling to M&E and technology. These variables are selected as key strategic factors that could help explain the relationship between themselves as a set and effective M&E. The findings of the relationship are important in the determination of informed recommendations to the entities that participated in the research study.

The National Biogas Programme of Ethiopia was established in 2009 to coordinate a dissemination of biogas technology in Ethiopia. The program is intervening in four main regions namely, Oromia, Amhara, SNNPR and Tigray regions, and also the new regions Afar, Somalie, Benshangul-Gumuz and Gambella including the new Sidama region. More than 756 rural youths were trained during NBPE I (2009-2013), as bio-digester masons, and as of mid-2016, with a poor retention rate (10% for NBPE I trained masons), a limited number of masons are active and continuing their operations in some 262 Woredas in 2016. There are some 30 bio-digester constructions enterprises (BCEs) registered and active in 2016, there are around 200 masons trained and active in the business and there are 5 MFIs providing credit to households with erratic credit availability and low repayment rates. Thus far, over 36,000 biogas digesters have been installed under the program. One of the main indicators of the program result is the number of domestic biogas digesters installed in a specified duration. In that regard, the program's yearly production achievement could be viewed as not growing as it was intended. From 2013 to 2022, the yearly production is declining.

The National Biogas Programme Steering Committee (chaired by the Federal State Minister for Water and Energy) at national level and Regional Biogas Programme Steering Committees presided by the regional heads of the Mines

& Energy Agencies or Bureaus of Water, and Energy. The daily implementation is overseen and coordinated by the National and Regional Biogas Programme Coordination Units in collaboration with Implementing Partners at woreda (district) level. As of the end of 2016 a total of 15,491 bio-digesters had been installed in some 262 woredas, out of around 600 Woredas of the large 4 regions. This is only about 1% of the country's conservatively estimated technical domestic biodigester potential. Scaling-up the dissemination of bio-digesters is one of the country's priority programmes and is included in the Sustainable Energy for All (SE4All) National Action Plan.

The last two phases of the National Biogas Program of Ethiopia (NBPE) biogas project report shows that out of the targeted project plan of bio-digesters construction, on average 60% of them were achieved. During the 3rd phase the same low implementation problem had an issue during the project review meeting, i.e., at the end of project year NBPE has already implemented 50% of the project target. As you have seen from Figure 1, during annual and midterm review meeting; poor monitoring & evaluation is one of the causes of low implementation and non-functionalities to the program.
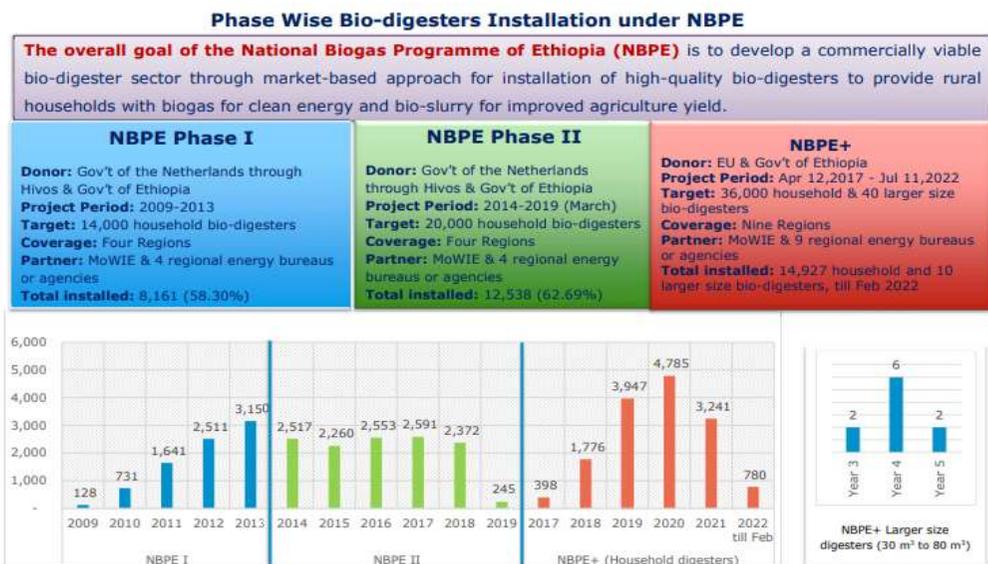

Figure 1: Phase wise Bio-digesters installations under NBPE
Source: the National Biogas Programme of Ethiopia

This study is focused and centralized the research activities and findings on factors which is affecting the effectiveness of the M&E system in the NBPE, since a good M&E practice is the heart of the project implementation which

also extends till the suitability and functionality of the project, the study is focused on the factors which is affecting the M&E system in the NBPE as the government organizations. In Ethiopia, lack of access to modern renewable energy and alternative services dramatically affects the health, economy, opportunities and qualities of life of people. The technical potential of the number of households in 4 regions (Amhara, Oromia, Tigray and SNPPR) of Ethiopia, for which domestic biogas is a relevant option, was conservatively estimated to be 1.1 million households in the feasibility study carried out in 2006. Another recent revised estimate for the existing 4 regions shows a technical potential of 1.32 million (based on rural access to safe water coverage data) to 3.92 million (based on national water coverage data) households, Similarly, for 4 new regions (namely; Afar, Benishangul, Gambella and Somali) shows the technical potential to be between 44,740 to 140,416 households. With this, the total technical potential adds up to a range of 1.37 m to 4.08 m households. Furthermore, building on the experience of household bio-digesters, the problems of institutions and enterprises that produce organic waste (resulting from cattle fattening, dairy farms and abattoirs) need to be, and can be, tackled as well. With this huge potential for biogas energy technology in order to solve the cooking energy scarcity in the rural area beside with 23 million EURO allocated budgets for such cooking energy generation couldn't achieve its target plan in order to plant 38,000 biogas/bio-digesters plants starting from 2017 till 2022. In fact, NBPE has started coordinating the program since 2008, but still reaching on the target is an issue, which indicates that the existing M&E system should be reviewed and assessed for better achievement of the plan target. Thus, assessing the factors for effectiveness of M&E practice contribute to the way forward how the project progress during the project implementation period could bring a kind of solution for such government development works.

Monitoring and evaluation provide critical feedback on the progress of programs and projects toward the achievement of goals. That is, the success or failure of projects, programs, or policies over the course of their life cycles. Monitoring and evaluation are critical aspects of project management (Bamberger & Hewitt, 1988). Building and maintaining an effective monitoring and evaluation system is a difficult task that necessitates ongoing commitment and resources. Because they provide continuous feedback to managers, M&E systems promote organizational learning through a cycle involving the

reflection of progress, learning, and mows for adjustments in the course of programs or projects as needed. Furthermore, it may take several attempts before the system can be tailored to a specific organizational policy, program, or project; however, it is possible (Kusek & Rist, 2004). Information provided by monitoring and evaluation systems is used as a critical management tool in achieving results and meeting specific targets. These systems have established themselves as a powerful, continuous management tool that decision makers can use to improve performance and demonstrate results, and result-based M&E systems have a unique capacity to add to this learning and knowledge process.

Monitoring and evolution can be said to be the heart of every project management and very critical for the successfulness of the project executions and implementations, but it is also a complex multidisciplinary skill and resources intensive process (Musnera & Mulyungi, 2019). In order to have a result-based M&E system, there is a fundamental requirement to improve the performance of check impact and benefits brought by the project. There is now a need to develop rules for developing minimum parameters for project monitoring and evaluation that can be used to track progress and effectiveness (Musnera & Mulyungi, 2019).

Government development organization's monitoring and evaluation practice have been developing by this time and has been given more attention in the recent period. Though, several reviews and studies show that there are still serious gaps and challenges in the M&E systems. Even if risks and external factors like federal, regional and state structure are there like bottlenecks for better practice of the M & E system, those identified risk not effectively monitored for timely mitigation of them. Key Performance indicators are not consistently used in monitoring and evaluation reports. M&E not undertaken on a timely and regular basis and reports not disseminated in time. Noticeable capacity limitation, in terms of number and skill mix of professional staff and inadequate incentive mechanism in the performance evaluation system for monitoring and evaluation activities undermine the effectiveness of monitoring and evaluation systems (ADB, 2016). Given this backdrop, this study attempts to answer the following research questions:

1. How does project monitoring and evaluations are being practiced in the National Biogas Program of Ethiopia (NBPE)?

2. What are the determinants of the effectiveness of the Monitoring and Evaluation system of the National Biogas Program of Ethiopia/NBPE?

2. LITERATURE REVIEW

2.1 Theoretical literature review

Theoretical frameworks are explanations for a phenomenon. According to Rocco & Plakhotnik (2009) and Ndege & Moronge (2016) it provides the researcher with a lens through which to view the world. A theory is an accepted fact that attempts to provide a plausible or rational explanation of a group of observed phenomena's cause-and-effect (causal) relationship (Obunga Robison, 2017). According to Hoekman (2020), theories can be classified according to their scope, function, structure and levels. The relationship depicted by these theories and models is therefore reflected in this section of the literature concerning factors influencing monitoring and evaluation of IT projects.

Monitoring and evaluation (M&E) are tools and techniques used to assess the relationships between intentions and actions, actions and outcomes, and outcomes and impacts. However, feedback is the most important, yet frequently overlooked, aspect of monitoring and evaluation. The feedback of lessons learned from M&E aids in correcting current mistakes and improving future decisions. A results-based management and evaluation system is essentially a feedback system; it is a management tool for measuring and evaluating outcomes, providing information for governance and decision making. While monitoring inputs and outputs is important in a results-based system, providing feedback on results at the level of outcomes and goals is paramount (Thanthirige *et al.*, 2016). According to Jeremiah & Kabeyi (2019), good monitoring and evaluation systems for civil society programs should be dynamic, participatory, reflective, and evolving. First, dynamic systems promote practical learning and regular ways of seeking dynamic feedback from multiple sources about the intervention's benefits, problems, and impacts. Second, participatory and gender sensitive systems actively seek to overcome barriers such as gender, age, power, culture, and other issues that limit all stakeholders' participation in the monitoring and assessment process. Third, reflective systems encourage staff, partners, and stakeholders to set aside regular time and space for data analysis and reflection on underlying assumptions or "theories of change" that underpin interventions. Fourth,

evolving systems adapt and change in order to remain as light and simple as possible while providing "real-time information that informs ongoing intervention improvement."

The monitoring and evaluation system provides evidence for managers to assist the managerial decision-making processes. The appropriateness of the quality of the monitoring & evaluation information that feeds into existing managerial processes should be carefully reflected. Good intentions, large programs and projects, and lots of financial resources are not enough to ensure that development results were achieved: NECESSARY but not SUFFICIENT for Success! The QUALITY of those plans, programs & projects, as well as how well resources are used are also critical factors for success. This is precisely where M&E becomes indispensable: Without effective planning, monitoring & evaluation, it would be difficult to judge if work is going in the right direction, whether progress & success can be claimed, and how future efforts might be improved (International & Agency, 2010). According to Obunga Robison (2017) monitoring is the routine activity tracking of the key milestones of project performance via the results chain through data collection analysis, regular reporting and surveillance. It determines if the inputs, activities and outputs are resulting based on the plan. Inputs are resources used to carry out the project. Monitoring is the art of gathering the necessary information with the least amount of effort in order to make the right steering decision at the right time. This data also serves as an important and necessary foundation for analysis, discussion, self-evaluation, and reporting. Monitoring differs from evaluation in that it is a regular and systematic process that is integrated into the project/program cycle. The goal is to determine whether programs are "doing the right thing and doing it right" in order to improve their quality. Monitoring is a continuous function that primarily aims to provide project management and the primary stakeholders of an ongoing program or project with early indications of progress, or lack in program or project achievement (UNDP, 2001). Monitoring is performed while a project is being implemented, with the aim of improving the project design and functioning while in action.

Bamberger & Hewitt (1988) defined monitoring as: an internal project activity designed to provide continuous feedback on a project's progress, problems encountered, and efficiency with which it is implemented The project's annual work plan and budget are essential prerequisites for monitoring. Monitoring

allows a manager to identify and evaluate potential problems as well as the success of a program or project. It serves as the foundation for substantive and operational corrective actions to improve program or project design, implementation, and results quality. Furthermore, it allows for the reinforcement of initial positive results. The Power of Measuring Results was useful to assess the following case and effects; If you do not measure results, you cannot tell success from failure, If you cannot see success, you cannot reward it, If you cannot reward success, you are probably rewarding failure, If you cannot see success, you cannot learn from it, If you cannot recognize failure, you cannot correct it and If you can demonstrate results, you can win public support (Robison, 2017; Tengan *et al.*, 2021).

Evaluation is the systematic & objective assessment of an ongoing or completed project, program or policy, as well as its design, implementation and results (Tengan *et al.*, 2021). It involves identifying and reflecting on the EFFECTS of what has been accomplished, and judging their worth; seeks to determine the relevance and realization of developmental objectives, efficiency, effectiveness, impact and sustainability. To provide credible & useful information that allows the incorporation of lessons drawn into the decision-making process. M&E provides government officials, development managers, Better means for the private sector and civil society to learn from past experiences, improve service delivery, plan and allocate resources, and demonstrate results as part of accountability to key stakeholders. Although evaluation is distinguished from monitoring, Monitoring presents what has been delivered and evaluation answers the question what has happened as a result of the intervention? Impact evaluation is a particular aspect of evaluation, focusing on the ultimate benefits of an intervention.

In government structures, effective M&E is indicated and assessed based on the following factors, namely; availability of a budget, M&E framework, CIMES structures, CIDP reporting indicators handbook, M&E champion, M&E communication strategy and M&E policy. Budgetary component serves to ensure that there are finances set aside for M&E activities. An existing M&E policy and framework is instrumental as it affirms the legality of the process as it is robustly anchored in law. Appropriate CIMES structures ensure that within the practice itself, there are checks and balances for different assigned roles and functions to guide the implementation of M&E activities. The CIDP indicators

handbook is key as it identifies the measures for assessment of status and subsequent level of implementation of M&E activities within the County. The availability of an M&E champion within the County is also vital as it campaigns for the need for institutionalization of the M&E process. A well-designed communication strategy of great importance as it provides a feedback mechanism between the government as the project implementers and the recipients.

1. Theory of Constraints

Popper & Koffler (1967) formulated this theory in the production environment explaining that the throughput rate of a system is determined by bottleneck. This introduced the theory of constraints as a means of managing a factory production process with an aim of maximizing throughput rate. Maximizing throughput rate would in turn maximize profit, cash flow and return on investment. In the multi-project environment, theory of constraints is applied as a critical chain methodology using the same principle of a capacity constrained resource (Jeremiah and Kabeyi, 2019). Even a small company can implement the full Critical Chain as the software is available at USD250 (Stratton, 2011). Monitoring and evaluation was shown to be an approach with significant differences to traditional critical path scheduling (Larney & Van Aardt, 2010), (Rand, 2000). In a large multi-project environment, like the construction industry, (Yang, 2007) pointed out that a construction industry would benefit greatly from critical allocation of budget scheduling. The construction industry uses multiple costly resources in the context of multiple projects executed by a single company. He pointed out that there are definite benefits and did so from a theoretical basis. Case studies exist for large companies such as Impala Platinum (Philis & Gumede, 2011) and complex projects such as refurbishment of C-5 aircraft (Best, 2006) but literature is sparse for urban development projects. The above theory relates to the budgetary allocation on monitoring and evaluation on performance water projects.

2. Stakeholder Theory

According to Freeman's (1984) seminal definition, Stakeholders are defined as "any group or individual who can influence or is influenced by an organization's achievement of its objectives." Hard-form stakeholder theory implies a duty-

based moral mandate that must be accepted regardless of whether the outcomes are financially beneficial to the firm. This moral imperative necessitates that marketers identify and accept responsibility for the negative societal consequences of their actions on all stakeholders. The theory of stakeholders was perceived as normative from its inception, rooted in the recognition of various parties' ethical claims. (i.e., stakeholders) that needed to be addressed rather than being primarily a tool for the efficient management of business. In referencing Rawls (1971) and Freeman (1984) noted that all parties influenced by the actions of a firm have moral and legal claims, anchored in justice, not to be negatively affected by firm-caused externalities that these stakeholders have not engendered. Stated positively, all firms have an unwavering ethical obligation to attend to the claims of affected parties (e.g., employees, customers, suppliers, the host community), insofar as the company negatively influenced or benefited from actions affecting those stakeholders.

The structural arrangements of an M&E system are important from several perspectives, one of which is the need to ensure the objectivity, credibility, and rigor of the M&E information produced by the system (Mackay, 2006). Khan (2003) agrees that the conceptual design of an M&E system should address issues such as system objectives, competent authority, information credibility, management, dissemination, and recycling into the planning process, with a special emphasis on community participation. M&E systems should be designed so that there is a demand for results information at every level of data collection and analysis. Furthermore, clear roles, responsibilities, formal organizational and political lines of authority must be established (Thanthirige *et al.*, 2016). There is frequently a need for some structural support for M&E, such as a separate evaluation unit, which at the very least requires one person to be identified as the internal champion to ensure that the system is implemented and developed. Furthermore, the systems must be consistent with the organization's core values and work in support of the strategy. A functional monitoring and evaluation consists of twelve components: structure and organizational alignment for M and E systems; human capacity for M and E systems; M and E partnerships; M and E plans; M and E work plans with costs; M&E system advocacy, communication, and culture; routine monitoring; periodic surveys; Databases that are useful for M&E systems Supportive supervision and data auditing; evaluation and research; and using data to improve outcomes According to Taut (2007) there is a lack of organizational

readiness for learning from evaluation. Furthermore, interviewees described a lack of open, transparent, and critical intra-organizational dialogue, as well as a lack of formal structures and processes to promote reflection and learning as an organizational habit. Simultaneously, there was a high level of awareness of the potential for evaluation to be used as a tool for learning, as well as demand for such evaluations.

2.2 Empirical Literature Review

A number of studies on monitoring and evaluation practices have been conducted. Tengan *et al.* (2021) stated that developing an effective M&E system is neither quick nor easy, but the need to strengthen institutions and learn from mistakes is critical. Canada has one of the most successful M&E systems in the world, though it took about 30 years to get to this point. Musnera & Mulyungi (2019) examined the Canadian M&E. A 30 year history discovered that developing a successful M&E system in an organization is determined by the amount of time, human resources, and financial resources invested in the process. The genuine need for M&E information should also exist, as a result of Canada's public sector reforms. He contended that developing the system takes years, not months, and that it should be linked to the management and decision-making processes. When backed up by a formal policy document, succinct communication on the role of M&E in projects is critical. In projects, an M&E unit ensures that the exercise is completed on time.

Musnera & Mulyungi (2019) examined the monitoring and evaluation of decentralized development in Kenya through the DFRD using Nyanza province as an example The Provincial Monitoring and Evaluation Committees (PMECs) and District Development Committees were in charge of M&E. However, the DRFD did not provide operational definitions of the terms Monitoring and Evaluation, resulting in an ambiguous authority and responsibility relationship between the Provinces and Districts. He discovered that the PMECs were not carrying out effective M&E because of a lack of operational definitions for the terms monitoring and evaluation, as well as a lack of clear delineation of responsibility between the province and districts. Because the system did not operate systematically, it did not generate timely, accurate, and relevant information. The M&E was captured in the Districts' DDC minutes, but they did not contain the data and information required from M&E. DDC and PMEC also failed to implement the M&E tools outlined in the District Development plans. The tools he mentioned were not created with the M&E purpose in mind.

The PMEC failed to generate useful information that was timely, relevant, and accurate. The main reason was that the M&E was completed in the province and woreda level instead of the project level.

2.3 Research Gap Analysis and Conceptual framework

The literature discussed in this section evidently stresses the need of having a functional M&E System built upon by requisite factors that includes; practitioner's professional capacity, professional work experiences and the capacity to adopt new and diffuse new technological innovations in the practice among others. The potential technological integration offered in Monitoring and Evaluation is immense especially when considering the upsides that includes; cost reduction, improved accuracy, richer data, greater outreach and better insights for the practice in general. Lack of skilled implementers in the practice is also a monumental challenge as it hinders productivity and efficiency in the long run. The lack of an inclusive approach in Monitoring and Evaluation also serves to derail effectiveness of the systems under implementation by not generating a sense of project ownership and subsequent acceptance (Vladimir, 1967). Institutionalization of the Monitoring & Evaluation culture in government is thus key as it determines the levels of transparency, accountability and certainly, commitment to success for any development intervention (ibid, 1967). It is also imperative that practitioners have a functional and comprehensible approach that promotes the utilization of M&E data into key decision-making processes by management. To the best knowledge of the researcher, there was no research as of then that had tackled technical capacity, work experience and technology, as a set of strategic factors that influences effective M&E.

This was used to guide the research study as it attempted to achieve project objectives and used to make the analysis. It indicated a logical sequence of processes that are interlinked by both the independent and the dependent variables under investigation. Stakeholder participations, budgetary allocations, organizational leadership competence of the staff handling to M&E and technology are the independent variables and effectiveness of M&E is the dependent variable. Effective M&E System as the dependent variable is assessed in terms of functionality across all departments, this is determined by the presence or absence of the following indicators, stakeholder participations,

budgetary allocations, organizational leadership competence of the staff handling to M&E and technology.
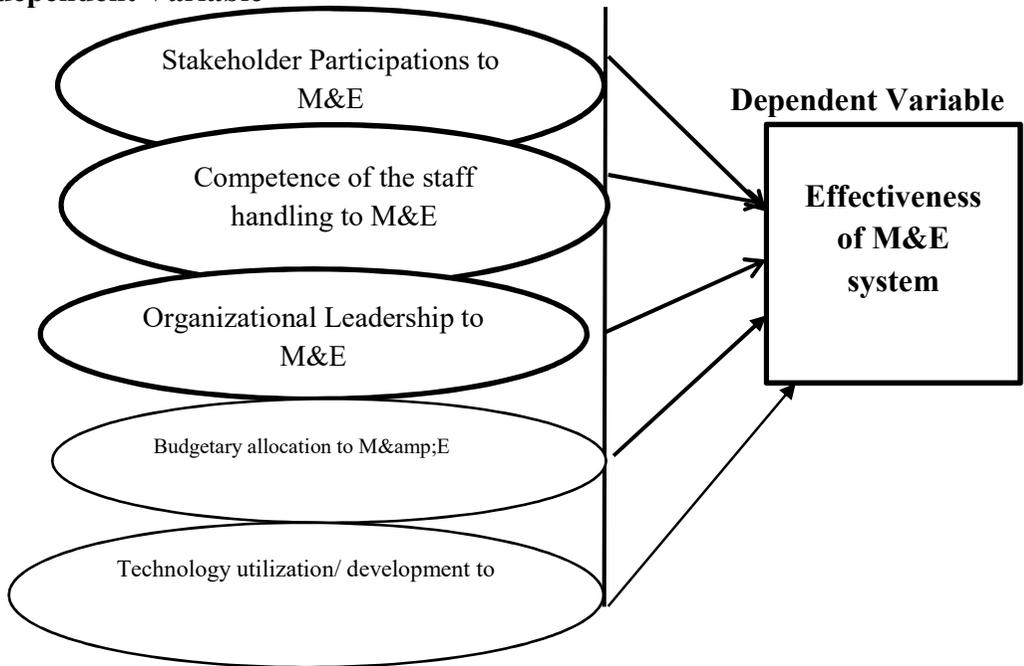
Independent Variable

Figure 2: The Study's Conceptual Framework
Source*:* Adapted from Stratman & Roth (2004)

3. RESEARCH METHODOLOGY
3.1 Research Design and approaches

This study employed descriptive and explanatory research design to describe and explain the determinants of the Effectiveness of M&E systems with focus on the National Biogas Program of Ethiopia as its case study. It is selected due to the fact that it is one of the government development organizations to secure cooking energy in Ethiopia. By appreciating the importance of project monitoring and evaluation practice, this study was designed to examine factors affecting the effectiveness of monitoring and evaluation practice in Ethiopia national biogas program including its eight regional coordination offices. According to Jha *et al.* (2010), the backbone of research study is the design, as it provides the components and plan for the study's success and creates a framework for seeking answers to research questions. Quantitative research

approach is employed in this study because it is the methodical and scientific technique for investigation of relationships. Quantitative research seeks to develop and apply mathematical models, concepts, and hypotheses to explain natural phenomena. This is quantitative research because the findings were obtained through the systematic collection and measurement of data, as well as the use of statistical tools.

3.2 Target Population and Sampling of the study

Population is defined by Kombo and Tromp (2006) as a group of individuals, objects, and items from which samples are taken for measurement. According to Bhattacharjee (2012) and Tengan *et al.* (2021), a sample is a subset of a population that shares the same characteristics as the entire population. A target population is the sum of all cases that were assigned to a specific set of conditions. The total population in this study is the employees of Ethiopia's national biogas program who work at the headquarters and regional offices. The target population was selected which were national biogas staff, focal M&E officers, other senior officers that integrated with biogas implementation roles. According to information obtained from the Human Resource Department recently there are a total of around 110 employees. From the target population of NBPE staff and M&E focal points, there is no need to do the sample size of n. This research is accomplished as a census survey method. Based on this, a total of 76 responders were chosen both from national and regional offices out of 110 employees of NBPE, respondents from top level management, team leaders, unit leads and officers that directly engage in monitoring and evaluation practice, and project management functional departments. From program manager/coordinator 11, from Engineers/technicians 31, from senior staffs which were (private sector developer, general support officer, finance officer, promotion/value chain officer) 28, and from M&E expert 2 were the part of the respondents, because they are directly or indirectly involved in M&E practice and are a useful source of information at national biogas program of Ethiopia. The targeted populations of this study answered the monitoring and evaluation practices and factors to its effects on the M&E effectiveness of Ethiopia national biogas program at both national and regional coordinating offices.

Table 1: Target Population of the Study

Responsibilities/Delegations	Population	Percentage
Program Manager/Coordinator	11	100%
Engineers/Technicians	31	100%
Senior Officers	31	100%
M&E Officers	2	100%
Total	76	100%

3.3 The Data and data analysis methods

Both primary and secondary sources of data were used for the study. Primary data were collected from respondents of the study using a structured close ended questionnaire and semi-structured interview. Secondary data for the study were collected from different journals, research studies, books, articles, internet websites and report documents from the project organization. According to Navarro-Rivera and Kosmin (2013), because questionnaires are the best survey instrument for collecting quantitative data because they are relatively inexpensive and simple to administer, this survey study used it as a research technique. As a result, the Structure questionnaire was used to collect data for this study. Except for questions about the respondents' demographic characteristics, close-end, mostly Likert-scale questions were used to collect data from them. The close end questionnaire was designed on a five-point Likert scale, with 1 indicating Strongly Agree, 2 indicating Agree, 3 indicating Neutral, 4 indicating Disagree, and 5 indicating Strongly Disagree. The reviewed literature provided insight into the effect of factors on M&E effectiveness in relation to project performance. The questionnaires are well-designed, with a focus on project monitoring practice evaluations practice, and its impact on the effectiveness.

The data were gathered via questionnaires and analyzed using the Statistical Package for Social Sciences (SPSS) version 22.0, as well as descriptive statistical data analysis tools such as percentage, frequency, mean, and inferential data analysis tools such as analysis of correlation and multiple regressions. The study also employed descriptive statistics, with practitioner responses presented in tabulated formats, charts, and graphs. Correlation analysis was performed to identify statistically significant and insignificant relationships between the studies' dependent and independent variables. Later,

regression analysis was performed using data obtained from the computation of independent variables that demonstrated statistical significance.

4. RESULT AND DISCUSSIONS

4.1 Descriptive Analysis of Variables

The mean of respondents in each variable of factors indicates the average amount that each variable has a positive or negative response of respondents; the mean or average is a measure of central tendency that provides a general picture of the data. In this study, the mean of each factor was calculated along with the overall mean/average mean of their respective variables in order to conclude the effectiveness of M&E systems/practices in NBPE. The mean statistical values of the items were based on a 5-point Likert scale and were illustrated using the following assumptions: if the mean (M) score is less than 3, the respondents disagree with the statement, if the mean score is equal to 3, the respondents prefer to remain Neutral, and finally, if the mean score is greater than 3, the respondents agree with the statement.

Accordingly, the mean scores have been computed for all the five factors which are *Stakeholder Participations to M&E, Competence of the staff handling to M&E, Organizational Leadership to M&E, Budgetary allocation to M&E and Technology utilization/ development to M&E*, even also the dependent variable *Effectiveness of M&E system* were equally weighting the mean scores of all the items under each factors. The average mean result of each factor with their respective variables was separately presented, analyzed and interpreted as follows.

Table 2: Descriptive Statics of Stakeholder Participations to the Effectiveness of M&E Practices

Items	Mean	Std. Dev.
Stakeholders are important	3.52	0.238
How participatory they are	2.64	0.810
Inputs from them is vital	3.46	0.265
Engagement during the M&E practice	4.44	0.500
Their role the project implementation and M&E system	3.52	0.153
Mean of Stakeholder Participations	**3.52**	

Source: Survey Result (2022)

Table 2 findings shows that, Engagement during the M&E practice with mean (M=4.44) which is highly agreed and also respondents agree more than normal and/neutral to the fact that the organization consider stakeholders are important for Effectiveness of M&E Practices with (M=3.52); inputs from them is vital (M=3.46); that How participatory they are to achieve Effectiveness of M&E Practices of the organization (M=2.64); their role the project implementation and M&E system (M=3.52). These findings indicate that stakeholder participation in the effectiveness of M&E Practices is above average, which is required in order to improve the effectiveness of M&E Practices in the organization (Hlatshwayo & Govender, 2015), as literature indicates that stakeholder participation is critical for the effectiveness of M&E Practices in many organizations as it can improve the organizations M&E Practices and core competencies.

Table 3: Descriptive Statistics of Competence of the staff handling to the Effectiveness of M&E Practices

Item	Mean	Std. Dev.
Relevant field of specialization is vital in M&E practice	2.83	0.904
Level of education attained is a factor in implementation of M&E	2.80	0.867
On-job trainings are key in improving M&E skills	2.51	0.581
Capacity building of M&E practitioners is undertaken regularly	2.44	0.648
Budget is allocated for capacity building trainings	3.52	0.184
Usefulness and Relevance of the trainings	2.64	0.810
Mean of competence of the staff handling	**2.79**	

Source: Survey Result (2022)

Competence of the staff handling is the other critical factor to the Effectiveness of M&E Practices. Table 3 represents that respondent agree around normal to the fact that on-job trainings are very important in effective M&E system with mean value (M=2.51), level of education attained also another factor in implementation of M&E practice with mean value (M=2.80), others like Relevant field of specialization is vital in M&E practice, budget is allocated for capacity building trainings and usefulness and Relevance of the trainings also shows with mean values of (M=2.86, M=2.44 & M=2.64), respectively, These finding shows competence of the staff handling have normal effect to enhance M&E of the organization, (World Bank, 2006) as literature indicate that,

competence of the staff handling had a positive significant impact on effectiveness of M&E practices;

Table 4: Descriptive Statistics of Organizational Leadership of the Effectiveness of M&E Practices

Items	Mean	Std. Dev.
Comprehension of the M&E system in place is vital	2.82	0.893
Assessment of the M&E and giving detailed information and insights on M&E practice	2.42	0.599
Strengthening the existing M&E	3.53	0.182
Learning opportunities are derived from previous assignments	2.63	0.795
Management is enough to follow M&E system	2.81	0.882
Professionalism is essential in undertaking of M&E function	3.51	0.132
Development of quality M&E reports	3.10	0.715
Mean of Organizational Leadership	**2.98**	

Source: Survey Result (2022)

As per the findings of the study, the respondents agreed to the extent that the organization leadership management have an impact to the effectiveness of M&E practice with mean (M= 3.53 & M=3.51) Strengthening the existing M&E, and Professionalism is essential in undertaking of M&E function respectively. Other items have mean values starting from 2.42 till 3.10. The respondents from the perspective of descriptive statistics indicated that the respondents agreed normally to the fact that organizational leadership affects the effective M&E practice of NBPE. This result indicated that organizations with strong leadership motivated the employees to play a great role in the monitoring and evaluation system in their organizations (Emmanuel Kyalo, 2020).

Table 5: Descriptive Statistics of budgetary allocation to the Effectiveness of M&E Practices

Items	Mean	Std. Dev.
Any budget for implementation of M&E	2.51	0.581
Budget is allocated for the M&E system	2.43	0.624
Assessment of the M&E System is undertaken regularly budget	2.51	0.581
Learning opportunities are derived by frequent budget	3.53	0.182
Mean of Budgetary allocation	**2.68**	**0.624**

Source: Survey Result (2022)

Table 5 describes that respondent agree above normal mean value is only that Learning opportunities are derived by frequent budget (M=3.53) which is derived by frequent budget and Any budget for management utilizes M&E derived data in decision-making items and for the rest items under Budgetary allocation are below mean value of normal, i.e., M=2.43 and M= 2.51. Budget is a key component of M&E system effectiveness in the organizations as literature indicated (Vladimir, 1967).

Table 6: Descriptive Statistics of Technology utilization/development to the Effectiveness of M&E Practices

Items	Mean	Std. Dev.
Current technologies have been adopted in M&E practice	2.83	0.904
Digital integration has been widely adopted in M&E practice	4.44	0.500
Technology adopted has helped achieve cost reduction	3.52	0.153
Technology adopted has improved accuracy of data obtained	3.46	0.265
Technology adopted is responsible for better data quality	3.52	0.184
Technology adopted is determined by cost implication	3.52	0.153
Mean of Technology utilization/development	**3.55**	

Source: Survey Result (2022)

Table 6 illustrates that respondent agree above normal mean value that Technology utilization and development play a vital role for effective M&E practice in the organizations, Digital integration adopted in M&E practice; M=4.44, Technology adaptation for cost implication, for better data quality and to achieve cost reduction have mean value (M=3.52) which are high value, indicate that technology utilization & development was enhanced the effective M&E system, This finding shows Technology utilization and development play a vital role for effective M&E practice in the organizations, as literature indicate positively affects organization M&E system (Musnera & Mulyungi, 2019).

Table 7: Descriptive Statistics of Factors Affecting the Effectiveness of M&E Practices (n=72)

Items	Mean	Std. Dev.
Stakeholder participation to effectiveness of M&E Practices	3.49	0.230
Competence of the staff handling to effectiveness of M&E practices	2.79	0.499
Organizational leadership of effectiveness of M&E practices	2.97	0.362
Budgetary allocation to effectiveness of M&E practices	2.68	0.469
Technology utilization to effectiveness of M&E practices	3.55	0.263

Source: Survey Result (2022)

From the Table 7 above, the mean score values of factors affecting the M&E practices ranges between 2.65 (mean score value of Budgetary Allocation) with standard deviation of 0.469 till 3.55 (means score value of Technology utilization) with standard deviation of 0.263. From this finding Technology Utilization/Development has the highest mean score which incriminates the Effectiveness of M&E Practices positively significant impact on organization M&E system; Stakeholder Participations and Organizational Leadership have good competitive advantage to the M&E practices of an organizations; in turn positively affects.

Table 8: Descriptive Statistics of Effectiveness of M&E system

Items	Mean	Std. Dev.
Well-formulated M&E policy and budget component is available	2.83	0.904
Well-designed M&E framework is set	3.46	0.265
Well established CIMES structures are set	2.51	0.581
Well-defined Integrated Development Program reporting indicators handbook is available	2.43	0.624
Well established M&E champion is available	3.52	0.153
Well-designed M&E communication strategy is available	2.64	0.810
Mean of Effectiveness of M&E system	**2.9**	

Source: Survey Result (2022)

Components under effectiveness of the M&E system shows that, most respondents revealed below neutral mean value/normal which tends to disagreement for the effectiveness of M&E practice in NBPE. Only mean average of M=3.52 which implies Well established M&E and M=3.46 of Well-

designed M&E framework plays a vital role in the Effectiveness of M&E system in development organizations. One development organization must require an effective M&E practice including Stakeholder Participations, Competence of the staff handling, Organizational Leadership, Budgetary allocation and Technology utilization/ development to M&E system, not only for effectiveness of the M&E system but also for achieving the objective of project scope.

4.1.2 Results of Correlation Analysis

The correlation between independent and dependent variables was examined using the Statistical Package for Social Science (SPSS). The correlation matrix below depicts the Pearson Correlation coefficient-based correlation between variables in the questionnaire. As a result, in this research study, the Bivariate Pearson Coefficient (r) was used to examine the relationship between the variables using a two-tailed statistical significance test at a level of 95 percent significance, P 0.01. The size of the correlation coefficient (r) is presented in table 9.

If the correlation coefficient is between 0.1 and 0.20, it is slight correlation or small; between 0.20 and 0.40, it is low correlation or weak relationship; between 0.40 and 0.70, it is moderate; between 0.70 and 0.90, it is high correlation or substantial relationship; and between 0.90 and 1.00, it is very high correlation or very strong correlation between variables (Burns, 2008). The above correlation matrix indicates that factors affecting the M&E practice were positively and moderately correlated with the organization's M&E system. The highest strong coefficient of correlation in this research is competence of the staff handling with the effectiveness of the M & E system (r=0.958, n=72, $p \leq 0.01$). It can be noted that there is a significant positive relationship between competence of the staff handling and the effectiveness of the M & E system

The second highest strong coefficient of correlation is between organizational leadership and the effectiveness of the M & E system (r =0.916, n =72, $p \leq$ 0.01). Hence, there is a significant positive relationship between organizational leadership and the effectiveness of the M & E system. The third coefficient of correlation is between budgetary allocation and the effectiveness of the M & E system (r =0.851, n =91, $p \leq 0.01$). Hence, there is a significant positive

relationship between competitive budgetary allocation and the effectiveness of the M & E system. The fourth coefficient of correlation is between Technology utilization/ development and the effectiveness of the M & E system (r =0.723, n =72, p ≤0.01). Hence, there is a significant positive relationship between Technology utilization/ development and the effectiveness of M&E systems. The fifth coefficient of correlation is between Stakeholder Participations and the effectiveness of the M & E system (r =0.676, n =72, p ≤0.01). Hence, there is a significant positive relationship between Stakeholder Participations and the effectiveness of the M & E system.

Table 9: Pearson Correlation Matrix

	Stakeholder participations	Competence of the staff handling	Organizational leadership	Budgetary allocation	Technology utilization	Effectiveness of M&E system
Stakeholder Participations	1	0.72**	0.73**	0.74**	090**	0.68**
		.000	.000	.000	.000	.000
	72	72	72	72	72	72
Competence of the staff handling	0.72**	1	0.94**	0.83**	.825**	0.96**
	.000		.000	.000	.000	.000
	72	72	72	72	72	72
Organizational Leadership	0.73**	0.94**	1	0.76**	0.83**	0.92**
	.000	.000		.000	.000	.000
	72	72	72	72	72	72
Budgetary allocation	0.74**	0.83**	0.76**	1	0.70**	0.85**
	.000	.000	.000		.000	.000
	72	72	72	72	72	72
Technology utilization/ development	0.90**	0.83**	0.83**	0.70**	1	0.72**
	.000	.000	.000	.000		.000
	72	72	72	72	72	72
Effectiveness of M&E system	0.68**	0.96**	0.92**	0.85**	0.72**	1
	.000	.000	.000	.000	.00	
	72	72	72	72	72	72

Source: Survey Result (2022)

Generally, the above correlation matrix shows that all variables are positively and moderately correlated with the dependent variable. In general, the finding depicts that all are important determinants of the effectiveness of the M & E system and significant to show the effect of all factors on the M&E Practice. On the above correlation table, the results show that all are significant. The convention implies that if this value is less than .05, then the correlation is considered to be significant (meaning that the researcher can be 95% confident that the relationship between variables is not due to chance). The researcher can connote that there is a significant correlation between the M&E factors and the effectiveness of the M & E system.

4.1.3 Results of Regression Analysis

The technique of regression is used to predict the value of a dependent variable using one or more independent variables (Albaum, 1997). Regression analysis is a statistical technique used to investigate relationships between variables. Typically, the investigator seeks to determine the effect of one variable on another. To investigate such issues, the investigator collects data on the underlying variables of interest and uses regression to estimate the quantitative effect of the causal variables on the variable under consideration. The investigator will also typically evaluate the "statistical significance" of the estimated relationships, which is the degree of certainty that the true relationship is similar to the estimated relationship (Navarro-Rivera & Kosmin, 2013). According to Yanamandram & White (2005) meeting the regression analysis assumptions is required to confirm that the obtained data accurately represented the sample and that the researcher obtained the best results. Below are the results of tests of assumptions.

1. Test of Multicollinearity

Check for the presence of multicollinearity if there are high correlations between some of the independent variables. The Variance Inflation Factor (VIF) is used in the study to calculate the impact of correlations among independent variables on the precision of regression estimates. The VIF factor should be less than 10 and ideally close to one. Tolerance measures how much of the variability of the specified independent variable is not explained by the other independent variables in the model and is calculated for each variable using the formula $1 - R2$. If this value is very low (less than 0.10), it indicates that the multiple correlation with other variables is high, implying multicollinearity. A good regression model must not have a strong correlation

among its independent variables or a multicollinearity problem, and the variance inflation factor (VIF) must be between 1 and 10, with a tolerance level greater than 0.2 (Robison, 2017).

Table 10: Multicollinearity Test Result

Model	Collinearity Statistics	
	Tolerance	**VIF**
Stakeholder Participations to M&E	0.146	6.836
Competence of the staff handling to M&E	0.074	13.484
Organizational Leadership to M&E	0.104	9.605
Budgetary allocation to M&E	0.225	4.448
Technology utilization/ development to M&E	0.109	9.134

Note: Dependent Variable is Effectiveness of M&E system
Source: Survey Result (2022)

As shown in Table 10, based on the coefficients output (Collinearity statistics), the obtained variance inflation factor (VIF) for four independent variables was found to be between 1 and 10, which means that there is no multicollinearity problem, only one independent variable has more than 10 which is 13.484 shows multicollinearity problem.

2. Test of Homoscedasticity

In regression analysis, Homoscedasticity is the assumption that the residuals at each level of the predictor variables have similar variances. That is, the spread of residuals should be fairly constant along any predictor variable. A basic analysis begins with the researcher plotting *ZRESID (Y-axis) against *ZPRED (X-axis) on SPSS because this plot is useful in determining whether the assumptions of random errors and Homoscedasticity have been met. The *ZRESID and *ZPRED graphs should resemble a random array of dots evenly distributed around zero. If this graph funnels out, there is probably heteroscedasticity in the data. If there is a curve in this graph, it is likely that the data violated the assumption of linearity.
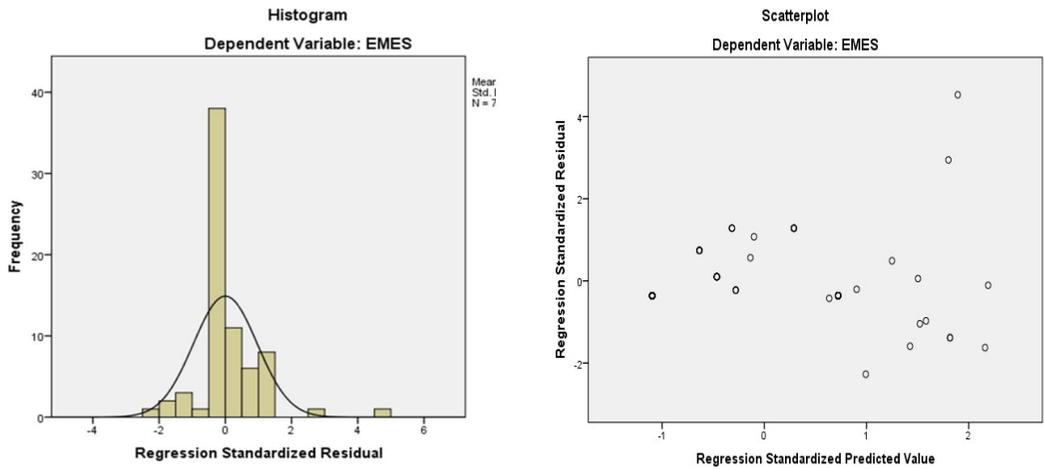
Figure 3: Scatter Plot of Regression Standardized Residual

   3.   Test of Linearity

The degree to which the change in the dependent variable is associated with the change in the independent variable was represented by the linearity of the relationship between the dependent and independent variables (Yanamandram & White, 2005). Linear models predict values that fall in a straight line by assuming a constant unit change (slope) of the dependent variable for a constant unit change of the independent variable (Yanamandram & White, 2005). The study looks for patterns in scatter plots of factors influencing M&E practice versus the effectiveness of the M&E system to see if they have a linear relationship and if the assumptions are met. The graph above shows that the effectiveness of the M&E system and the factors influencing M&E practice did not have a linear relationship/cause and effect.

   4.   Test of Independent errors

The residual terms should be uncorrelated for any two observations (or independent). This is sometimes referred to as a lack of autocorrelation. The Durbin–Watson test, which looks for serial correlations between errors, can be used to test this assumption. It specifically checks to see if adjacent residuals are correlated. The test statistic ranges from 0 to 4, with a value of 2 indicating that the residuals are uncorrelated (Shutt, 2012). The Durbin–Watson test result value in Table 4.11 is 1.113, which is so close to 1, indicating that the residuals are uncorrelated in some way (or independent).

Linear regression calculates the coefficients of a linear equation that includes one or more independent variables and best predicts the value of the dependent variable (Shutt, 2012). Multiple linear regression was used to determine the explanatory power of the independent variables (stakeholder participations, competence of the staff handling, organizational leadership, budgetary allocation, and technology utilization/ development) in order to identify the relationship and the most dominant variables influencing M&E practice. The significance level of 0.05 was used, with a 95% confidence interval. Multiple regression analysis was used to evaluate the direct effect of these variables on the effectiveness of M&E practice. The model summary of the regression analysis is shown in table 11.

Table 11: Model Summary for effective M&E practice

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin Watson
				R^2	F-test	df1	df2	Sig. F	
.979[a]	.958	.955	.08312	.958[a]	300.3	5	66	.000	1.113

  a. Predictors: (Constant), TUDME, BALME, OLSME, SHPS, CSHME
  b. Dependent Variable: EMES.
  Source: Survey Result (2022)

R - Indicates the multiple correlation coefficients between the predictors and the outcome, with a value ranging from 0 to 1, with a larger value indicating a stronger correlation and 1 representing an equation that perfectly predicts the observed value (Tompkins, 1991). According to the model summary (R = 0.979), the linear combination of the five independent variables (stakeholder participation, staff handling competence, organizational leadership, budgetary allocation, and technology utilization/development) strongly predicts the dependent variable (the effectiveness of M&E system).

R-Square (R^2) - indicates the proportion of variance in the dependent variable that can be explained by the linear combination of the independent variables. R^2 is a measure of how much of the variability in the outcome is explained by the predictors. R^2 values also range from 0 to 1(Tompkins, 1991). The linear combination of M&E factors variables or predictors, namely stakeholder participation, staff handling competence, organizational leadership, budgetary allocation, and technology utilization/development, explains 95.8 % of the variance in M&E system effectiveness, with the remaining 4.2 % explained by

extraneous variables not included in this regression model. The adjusted R2 indicates how well the model generalizes, and its value is the same as, or very close to, the value of R^2. That is, it modifies the R^2 value to better represent the population under study (Tompkins, 1991). The difference for the final model is negligible (in fact, the difference between R^2 and Adjusted R^2 is negligible) (.958 - .955 = .003) which is about 0.3%. This shrinkage means that if the model were derived from the population rather than a sample it would account for approximately 0.3% less variance in the outcome.

Durbin-Watson - The Durbin–Watson statistic indicates whether or not the assumption of independent errors is acceptable. According to the conservative rule, values less than one or greater than three should definitely raise red flags (Jeremiah and Kabeyi, 2019). As a result, when the value is close to 2, the desired result is obtained, and for this data the value is 1.113, which is close to 1 that the assumption has certainly been met.

Table 12: ANOVA of Effective M&E Practice

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	10.374	5	2.075	300.267	.000[b]
	Residual	.456	66	.007		
	Total	10.830	71			
a.	Dependent Variable: effectiveness of the M&E system/ EMES					
b.	Predictors: M&E factors/SHPS, CSHME, OLSME, BALME, TUDME					

Source: Survey Result (2022)

In the **ANOVA** sub table above, we have the F value of 300.267 which is significant with p <0.01. This informs us that the five independent variables taken together as a set are significantly related to the dependent variable. Therefore, we can conclude that our regression model results in significantly better prediction of effectiveness of the M&E system and that the regression model overall predicts the M&E practices significantly well. The regression coefficient explains how much change in the dependent variable is caused by a unit change in the independent variable. The greater the value of an independent variable's Beta coefficient, the more support the independent variable has as the more important determinant in predicting the dependent variable.

Table 13: Summary of Coefficient on effective M&E Practice

Variables	Unstandardized Coefficients		t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error			Lower Bound	Upper Bound
Constant	1.168	.181	6.464	.000	.807	1.529
Stakeholder Participations	.276	.112	2.464	.016	.052	.499
Competence of the staff handling	.613	.073	8.441	.000	.468	.758
Organizational Leadership	.331	.084	3.923	.000	.163	.499
Budgetary allocation	.123	.044	2.775	.007	.034	.211
Technology utilization/ development	-.635	.113	-5.607	.000	-.861	-.409

Note: Dependent Variable: effectiveness of the M&E system/ EMES
Source: Survey Result (2022)

The marked column B is the value for the intercept (a) in the regression equation on the first row, labeled (constant). The numbers below the column ''βeta'' are the values for the regression coefficients for stakeholder Participations, competence of the staff handling, organizational leadership, budgetary allocation, technology utilization/ development. In the multiple regression, this standardized regression coefficient Bate (β) is useful, because it allows you to compare the relative strength of each independent variable's relationship with the dependent variable (Tompkins, 1991).

The above coefficient table shows the constant beta value (β) and p-value of the variables to examine the significance of independent variables. The significance level of each variable (P-value) is: .016, .001, .001, .007 and .001 and their standardized coefficients are .163, .783, .307, .148 & -.428 respectively. The p-value of all the independent variables is below 0.05 which implies all have a significant relationship with the dependent variable (the effectiveness of M&E system).

The standardized beta value indicates how many standard deviations the outcome changed as a result of a one standard deviation change in the predictor. The standard deviation units are directly comparable; therefore, they provide a better insight into the importance of a predictor in the model. The larger the value of beta coefficient in an independent variable means the more important

determinant the variable is in predicting the dependent variable. The standardized beta value for stakeholder participation is .163. This implies that, this variable has relatively strong degree of importance for analyzing the effect M&E factors on the effectiveness of its practice, followed by competence of staff handling, organizational leadership, budget allocations and technology development & utilization variable whose beta value equals 0.783, 0.307, 0.148 and -0.428, respectively. When you look at the above table, variables with higher beta values have higher levels of significance so that they can contribute a lot in explaining the dependent variable. Also, variables with a lower beta coefficient have a lesser level of significance and cannot contribute a lot in explaining the dependent variable; the negative sign indicates inverse cause & effect/relationships.

5. CONCLUSIONS AND RECOMMENDATIONS

Under this study five research questions were developed and addressed in this research. The first research objective of the study was to examine the factors affecting the effectiveness of M&E system which are stakeholder participations, competence of the staff handling, organizational Leadership, budgetary allocation and technology utilization/ development of NBPE, from the finding the study can conclude that stakeholder participation, competence of the staff handling, organizational leadership and technology utilization/development have significant effect on the effectiveness of M&E system of NBPE, and also budgetary allocations have slightly effect on the M&E system. The study revealed the coefficient of correlation analysis competence of the staff handling; organizational Leadership, budgetary allocation and technology utilization/ development have a positive and significant effect on the effectiveness of the M & E system of NBPE.

Based on the indication of variables in regression analysis, it can be possible to conclude that the four factors; stakeholder participations, competence of the staff handling, organizational Leadership and budgetary allocation have a significant effect on effectiveness of M&E system and technology utilization/ development has negative significant effect on effectiveness of M&E system. The study also concludes that stakeholder participation and technology utilization and development have a significant impact on project M&E effectiveness, and that organizational leadership and staff handling competence has a significant impact on project M&E effectiveness. The study also

concludes that a good M&E budget estimating the costs, staff, and other resources required for M&E work is required in order to successfully complete effective M&E projects. The study also concludes that in order to give the monitoring and evaluation function the credit it deserves in project management, the project budget should include a clear and adequate provision for monitoring and evaluation events.

The research study established that stakeholder participations, organizational leadership, competence of the staff handling and technology utilization/ development variables have a great influence over the effectiveness of M&E practice and other budgetary allocation variables slightly influence effective M&E. As a result of these findings, management should channel more effort in ensuring that the technical capacity among experts is improved, also stakeholder participation and good higher leadership should be there and investment is also made in the field of technology adoption.

Regular capacity-building training should be conducted to provide practitioners with up-to-date information on the practice. There is also a need to engage practitioners, particularly from the M&E field and/or related disciplines, as this has improved professionalism in the execution of roles and functions. Budgetary allocation should also be sufficient to cover the acquisition and adoption of new technologies for practice, as well as utilization for on-the-job training. Diversification of technologies is also required because it has usher in digital integration, in which different technologies used to complement each other, increasing efficacy and enriching data for varied uses, including decision-making responsibilities.

The study also discovered that stakeholder participation, organizational leadership and technology development & Utilization have significant impact on the effectiveness of project M&E. As a result, it is recommended that all stakeholders actively participate in M&E activities for projects funded by the central government in order to achieve effectiveness. The development organization should also schedule time for all stakeholders to participate in M&E activities to ensure that people decision-making processes and government decision-making capacity at various levels are achieved. According to the study, when recruiting monitoring and evaluation officers, their competencies should be based on accuracy levels, time required to complete a task, monitoring and evaluation knowledge, and accountability and

responsibility. According to the study, the project budget should include a clear and adequate provision for monitoring and evaluation events. The budget should also account for unforeseen and fluctuating material costs. Finally, the study suggests it should be part of the organization's human resource development policy to orient and train middle management for M&E functions, as well as rotate them into different jobs.

5. LIMITATIONS AND FURTHER RESEARCH

The study suggests that a similar study be conducted on other government development organizations to see if the results are similar. This study looked at stakeholder participation, staff handling competence, organizational leadership, budgetary allocation, and technology utilization/development as a group and how they influenced effective M&E. Additional research could be conducted to look into other strategic factors not covered in this study, such as finance, good governance, and the HR system. This study could be replicated in different government projects to establish the same while using a different research design, instruments, and analysis techniques.

The following research topics are suggested for future study: The impact assessment of M&E practices for project sustainability and carbon financing if the project is green initiatives, as well as the impact of monitoring and evaluation systems on project or program M&E practice. Future studies should include an assessment of the barriers to M&E practice in development organizations. This study is significant because it assists an organization in identifying areas of the system that need to be polished in order to improve M&E effectiveness. Similar studies would be interesting for future researchers to conduct. Other researchers could look at how to improve the effectiveness of monitoring and evaluating government projects, particularly how to ensure citizens benefit from the project's output through sustainability.

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