MONITORING AND EVALUATION PROCESSES, PROJECT MANAGEMENT MATURITY AND PERFORMANCE OF DIGITAL EDUCATION TECHNOLOGY PROJECT IN MALAWI

BY

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DECLARATION

This thesis is my original work and has never been presented in any other university or institution of higher learning for examination or academic purpose.

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This thesis has been submitted for examination with our approval as the University Supervisors.

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DEDICATION

I dedicate this work to my family. Despite enduring painful moments due to my absence, they continued to be with me during this hectic academic journey.

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LIST OF ABBREVIATIONS AND CRONYMS

DET:	Digital Educational Technology
EMIS:	Education Management Information System
GDP:	Gross Domestic Product
HDI:	Human Development Index
ICT:	Information Communication Technology
IT:	Information Technology
M&E:	Monitoring and Evaluation
PMI:	Project Management Institute
PMM:	Project Management Maturity
PROMMM:	Project Management Maturity Model
TOC:	Theory of Constraints
UAE:	United Arab Emirates
UNDP:	United Nation Development Program
UNESCO:	United Nations Educational, Scientific and Cultural Organization
UK:	United Kingdom
USA:	United States of America
SIG:	Statistical Significance
SACMEQ:	Southern and Eastern Africa Consortium for Monitoring Educational Quality
SD:	Standard Deviation
VIF:	Variance Inflation Factor

ABSTRACT

The Digital Education Technology Project (DET) in Malawi had performance challenges despite an undertaking of Monitoring and Evaluation (M&E). In this regard the study aimed to investigate the influence of M&E Processes on the performance of the project and the moderating influence of Project Management Maturity (PMM) on this relationship. Specifically the study sought to establish how Planning for M&E, Implementation of M&E, Dissemination of M&E results and Utilization of M&E results influenced the performance of DET project. Furthermore the study established the combined influence of M&E processes on performance of DET project. The study also established the moderating influence of PMM on the relationship between M&E processes and performance of DET project. Methodologically the study was guided by descriptive correlational survey design within mixed methods approach. The target population comprised 456 persons who were involved in the management; implementation and M&E of the project of which 205 respondents were sampled using proportionate stratified random sampling approach. Questionnaire and interview guide were utilized as data collection instruments. These instruments were piloted to ensure validity and reliability. Quantitative data was analyzed using Statistical Package for Social Sciences and both descriptive and inferential statistical techniques were used. The descriptive statistics were presented as Frequencies, Means and Standard Deviations while Pearson Product Moment Correlational Coefficient, enter and stepwise regression analyses were used as inferential statistical tests. The qualitative data was analyzed using thematic analysis and this involved the identification of recurrent themes from the voices of the participants. With $r=0.415$, $r^2=0.172$, $F(1,183)=37.852$ at $p=0.001<0.05$ it was concluded that Planning for M&E had a significant positive influence on performance of DET project. Further, Implementation of M&E positively and significantly influenced DET project performance [$r=0.464$, $r^2=0.216$, $F(1, 183)=50.029$ at $p=0.001<0.05$]. In addition the influence of Dissemination of M&E results was positive and significant [$r=0.367$, $r^2=0.135$, $F(1, 183) = 28.309$ at $p=0.001<0.05$]. Furthermore with $r=0.489$, $r^2=0.239$, $F(1, 183) = 57.266$ at $p=0.001<0.05$ Utilization of M&E results had a significant positive influence on performance of DET. With $r=0.506$, $r^2=0.256$, $F(1, 183) =62.511$ at $p=0.001<0.05$ the Combined M&E processes positively and significantly influenced DET project. In addition, the influence of PMM on DET project performance was positive and significant [$r=0.488$, $r^2=0.238$, $F(1, 183) =57.266$ at $p=0.001<0.05$]. Lastly it was found out that the influence of M&E processes on the performance of DET project depended on PMM of the implementing organization such that the influence got stronger with increasing PMM levels. The study recommends that the implementing organization should be more inclusive in Planning for M&E. In addition there is need to intensify supervision so that M&E tasks are implemented in a timely manner. Further, the organization should embark on capacity building initiatives on Dissemination of M&E results as this was the least executed aspect of M&E despite being critical to DET project. Continued investment in Utilization of M&E results is recommended as this was an aspect that had the highest influence on DET project performance despite its moderate execution. The Implementing Organization and Ministry of Education should look at M&E as a holistic process in view of the fact that a combination of these processes had a strong influence on DET project. Lastly more investment in Project Management should be considered as it increased the effect of M&E processes on DET project.

CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

Monitoring and Evaluation (M&E) is important as it ensures that a project is implemented according to plan. As argued by Kyalo, Mulwa and Nyonje (2015) the rationale of M&E is to make sure that inputs, work schedules and outputs are proceeding as per project plan. Such a view is shared by Scheirer (2012) who contends that M&E results are utilized are used to improve the implementation of the project plan and to establish that the project achieved its objectives. This is in line with United Nation Development Program (2009) description of M&E when they underscore that M&E provides opportunities aimed at validating the logic of a project, its activities and their implementation. It is for this reason that M&E results are fundamental in informing project decision making and learning by providing information bordering on the progress and status of the project undertaking. The ultimate goal of all this is to ensure the realization of a project that has performed according to the set objectives. Thus enhancement of project performance is the overall motivation of M&E undertaking. This is consistent with UNDP (2009) assertion that the prime objective of M&E is to enhance the achievement of project results.

For M&E to have a desired effect on the performance of the project, it has to be properly planned and implemented; its results have to be communicated to relevant stakeholders and have to be utilized (Kyalo et al., 2015). This in part is consistent with program evaluation standards as developed by the Joint Committee on Standards for Educational Evaluation (2011) which *interalia* call for M&E undertaking to be in line with the principles of accuracy (Planning and Implementation) and Utility (usefulness of M&E results).

The need to undertake M&E has been embraced by various countries and organizations implementing a variety of projects. For instance the government of Kenya has constitutional provisions that support the M&E of projects at both county and national

government levels (Ministry of Devolution and Planning, 2016). In addition the South African Government has the ministry of M&E whose responsibility is to design, monitor and evaluate government funded projects (Cloete, Rabie & De Coning, 2014). In Malawi the Cabinet subcommittee on project design and implementation was instituted in 2017 to oversee the implementation and monitoring of government projects and it reports to the president on the progress of projects (2017 Malawi National Budget Statement). With respect to the Digital Educational Technology (DET) project which was implemented in 53 Malawian primary schools between 2015 and 2017 with an aim of equipping early grade learners (standard one and two) with literacy and numeracy skills, 400000 Great Britain Pounds was allocated for research, monitoring and evaluation of the project.

In view of the foregoing it can be concluded that financial commitment and political will exist for M&E undertaking. However despite all these efforts, performance of various projects has not been as expected. As argued by Richardson (2015) approximately 50% of projects implemented over the past 30 years have been late in completion or/and exceeded budget; and 25% have been cancelled before completion. With respect to DET projects, it has been reported that many projects in this area are failing because of teachers' lack of confidence in the use of technologies and resistance to change (Karolcik, Cipkova & Kinchin, 2016). Moreover Khaddage, Muller and Flintiff (2016) while acknowledging the positive effect mobile technologies have on learner engagement, they contend that the adoption of these technologies in the formal classrooms has been unimpressive as many teachers in schools and colleges are reluctant to allow their widespread access. It is therefore important that a study be conducted in order to examine the influence of M&E processes on performance of DET projects in Malawi. Such an empirical investigation of the relationship between these variables may go a long way in yielding evidence that can justify all forms of commitments attached to M&E undertaking.

1.1.1 Performance of Digital Educational Technology Project

The execution of development interventions mainly takes a project based approach. As defined by Gitonga (2010), a project is an endeavor with coordinated set of unique non-repetitive and temporary activities undertaken to create a unique product, service, or

process for target beneficiaries within the constraints of schedule, budget, quality and scope. Thus a project based approach to implementation of development intervention would ensure that a development intervention is completed within time, budget, quality and scope.

In defining performance of DET project therefore, time, budget, quality and scope are at the helm as these tenets are consistent with the notion of project. This is confirmed by Kerzner (2003) who operationalizes project performance as the completion of a project a) within the allocated time period b) within the budgeted cost c) at the proper performance or specification level d) with acceptance by the user and with minimum or mutually agreed upon scope changes e) without disturbing the main work flow of the organization and changing the corporate culture. Thus project performance is a function of several factors hence it is a multifaceted phenomenon.

With reference to the performance of DET in Malawi, the aim of the project was to enhance literacy and numeracy performance for standard one and two learners. Thus in gauging the performance of this project literacy and numeracy performance was looked at from the perspective of quality, scope and time as these are criteria used to determine project performance (Richardson, 2015).

1.1.2 Monitoring and Evaluation Processes

Monitoring and Evaluation of project intervention is critical in ensuring that the project resources are used as intended. Thus M&E is central in ensuring accountable use of project resources. As argued by Khander, Koolwal and Samad (2010) M&E borders on comparing project outcomes with specific targets thereby enhancing accountability and project implementation. Consequently project performance is promoted since M&E is a vehicle of assuring that project resources are fully utilized; project completion will be within time and budget leading to the attainment of project objectives. Based on the foregoing it can be concluded that M&E is fundamental to the enhancement of project performance as it provides a learning ground in relation to the progress of the project. Indeed the learning provision of M&E has been emphasized by De Kool and Van Buuren,

(2004) when they highlight that "the goal of M&E process is not the report, but the process in which actors collect, interpret, and learn from information, in which they interact with each other and in which they create new knowledge"(p.26).

It should be pointed out that Monitoring and Evaluation are different though closely related. Evaluation entails a systematic and objective assessment of the results with an aim of proving that changes in the targets are only due to the interventions that were undertaken (Khander, Koolwal & Samad, 2010). On the other hand Monitoring is associated with a continuing function that aims to provide management and main stakeholders of an ongoing intervention with early indications of progress or lack thereof in the achievement of results (United Development Program, 2002 cited in Mertens & Wilson, 2012). Thus feedback from the Monitoring exercise is critical as it provides insights that could influence the enhancement of project progress. In this study therefore, focus will be put on both Monitoring and Evaluation in relation to DET intervention and in particular the extent to which attainment of project objectives was due to the M&E processes that were undertaken.

To achieve a successful M&E undertaking there is need for the exercise to be undertaken in a systematic manner. To this end the M&E process requires Planning, Implementation, Result Dissemination and Result Utilization (Kyalo et al. 2015). Consistent with this assertion this study adopted Planning for M&E, Implementation of M&E, Dissemination of M&E results and Utilization of M&E results as components of the M&E process. These tenets were therefore the independent variables of the study and each one of them is explained hereunder.

1.1.3 Planning For Monitoring and Evaluation

Planning for M&E undertaking is paramount to ensure a robust M&E exercise that can reflect the progress of a project. As stipulated by Association for Project Management (2015) planning is the process of identifying methods, resources, and activities necessary to accomplish the project objectives. Thus planning for M&E involves conceptualization of the M&E process and this requires identification of methods, resources and M&E

activities. According to the UNDP (2009) planning for M&E should start at the time of project design. This is important as the project will be implemented with adequate knowledge of M&E approaches to be adopted. This will ensure adoption of M&E approaches that will be consistent with the project goals and objectives (Mertens & Wilson, 2012).

Planning for M&E exercise should take into consideration the logic of the project. This is because its essence is to validate the project logic which articulates concretely how the intervention may lead to the anticipated changes (Chikati, 2009). To this end planning should be looked at from the perspective of expected results, indicators, data collection methods, schedule, responsibilities, resources and risks (UNDP, 2009). It is for this reason that logic model was amongst the indicators of planning for M&E. In view of the fact that M&E is associated with gathering and processing of project information in order to make sense of how the project is running (Stufflebeam, 2007), data collection and data analysis were also used as indicators of planning. Again owing to the fact that planning needs to define M&E activities, scope of the project parameters requiring M&E is was utilized as indicator of planning. Furthermore as M&E is comprised of several activities requiring proper coordination, the importance of scheduling cannot be overemphasized and it is for this reason that scheduling was one of the planning indicators of M&E. In conclusion planning as a component of M&E was examined based on the following indicators: M&E plan, scope of M&E, data collection, data analysis and stakeholder participation.

1.1.4 Implementation of Monitoring and Evaluation

Implementation of M&E is associated with executing its blue print which includes the purpose of M&E, questions that would be addressed in the M&E process and how data will be collected and analyzed. Such a perspective is confirmed by Kidombo, Gakuu and Keiyoro (2013) when they define execution as the carrying out of planned project tasks. The planned project tasks are in this respect M&E activities which have to be actualized as part of the M&E process.

The M&E exercise can be properly planned but if the implementation of the same is poor the essence of M&E undertaking is defeated. In this regard the importance of proper implementation of M&E activities cannot be overemphasized. As UNDP (2009) stipulates, the implementation of planned M&E activities has to be systematic. In this connection the UNDP highlights steps that should be followed for effective implementation of M&E activities which include 1) understanding of M&E policies applicable to the institution; relevant key roles and responsibilities associated with the M&E process, tools and approaches 2) reinforcing and elaborating initial M&E framework 3) implementation of M&E actions 4) use of M&E data for decision making.

As highlighted in the foregoing, the UNDP sees implementation as also embracing the notion of use of M&E data for decision making. However in this study the concept of implementation was treated independently from the notion of utility. This is based on the fact that M&E exercise can be successfully implemented leading to the production of a comprehensive report only to observe that the report has not been used in informing program decision making processes (Alkin, 2013). The study was of the view that implementation is associated with execution of the M&E plan developed during planning which is achieved through proper coordination of M&E activities. Furthermore personnel assigned different responsibilities should do their work to ensure that the M&E plan is properly executed. Again time is of essence during implementation as M&E is done in a project setting where time is critical (Richardson, 2015). In addition, successful M&E implementation entails collection of appropriate data and use of appropriate data analysis techniques (Chikati, 2009). In this regard the notion of implementation was looked at based on M&E plan, responsibilities, timeliness, coordination of M&E activities, and collection of appropriate data and appropriateness of data analysis techniques as indicators.

1.1.5 Dissemination of Monitoring and Evaluation Results

Dissemination of M&E results is associated with communicating results to relevant stakeholders which include project staff, beneficiaries and funders. This is critical as it makes all relevant stakeholders conversant with the progress of the project so that decisions regarding what should be changed or maintained are made with full knowledge of the

stakeholders. As contended by Adamchak, Bond, MacLaren, Magnani, Nelson and Seltzer (2000) "M&E results help stakeholders understand what the program is doing, how well it is meeting its objectives and whether there are ways that progress can be improved" (p. 149). Indeed this can be achieved if results are shared to stakeholders. Adamchak et.al further stipulate that sharing results is important in ensuring social, financial and political support that is critical in improving the program. In addition publicizing results gives public recognition to the stakeholders and volunteers who have worked hard to make the program a success which is a recipe for the attraction of new funders. Based on the above discussion, it can be concluded that dissemination of M&E results is vital and every effort should be made to ensure a smooth dissemination process. As stipulated by Asian Development Bank (2011) effective communication in a project is important for the success of the project. Such a view is shared by Muszynska (2015) who cites effective communication as a critical factor that contributes to the success of a project. To this end dissemination of M&E results which is an aspect of project communication is critical for project success.

For effective result dissemination to be achieved an M&E report has to be produced and a dissemination plan has to be formulated. Dissemination can take the form of oral presentation and circulation of an M&E report to the stakeholders among others. This is because satisfaction of the stakeholders with the dissemination process is an indication that the dissemination was executed competently. In this regard, the concept of dissemination of M&E results embraced clarity of the M&E report, clarity of dissemination plan, use of dissemination feedback and stakeholder involvement.

1.1.6 Utilization of Monitoring and Evaluation Results

Utilization of M&E results is associated with the use of M&E results. Bhikoo and Louw-Potgieter (2013) as cited in Cloete et.al (2014) argue that evaluators usually spend much time in designing and implementing an evaluation that yields credible results but the findings are not used by stakeholders for programme improvement. This situation is opposed by Patton (2007) who argues that the essence of an evaluation is based on use of results (Mertens & Wilson, 2012). To this end Patton contends that an evaluation can be

very well implemented with robust evaluation model and design but if its results are not used, it remains a bad evaluation. Thus utilization of M&E results is critical and should be accorded consideration during the M&E process (Alkin, 2013).

The importance of M&E results has been stressed by Adamchak et.al (2000) and is summarized as follows: Firstly results help to improve a program intervention as it puts the project staff in a learning mode regarding how the project is progressing in the context of what is going on right or wrong; a perspective which Richardson (2015) is in agreement with. Secondly M&E results are instrumental in advocating for additional resources which are critical to the expansion of the program. This is because results shape donors decisions regarding the allocation of resources to competing programs (Stufflebeam & Shinkfield, 2007). Thirdly, M&E results are important as they contribute to the global understanding of what works. The world may know what is working and not in relation to certain types of projects. By doing so, a contribution to the body of knowledge of how certain projects work is enhanced and other sectors wishing to implement similar programs may learn from it (Calley, 2011). The fourth point is that M&E results are critical in informing decisions associated with program implementation changes. A stakeholders meeting aimed at discussing the results may agree on modifications regarding implementation process. This importance of M&E results is in line with De Kool and Van Buuren (2004) when they state that "Monitoring is frequently used as a measure to control the implementation of policy programs"(p.26). This entails that when failures are detected during the M&E process, changes aimed at improving the program are made.

In view of the foregoing discussion, it can be implied that M&E result utilization borders on provision of lessons to the project staff regarding how the program is working, how the project design is being adhered to, how project resources are being used and the program implementation changes. It is for this reason that the variable of M&E result utilization captured usefulness of results in improving project design, project implementation, project intervention and mobilization of resources as indicators.

1.1.7 Project Management Maturity

The concept of Project Management Maturity (PMM) is important as it is associated with a measure of an organization's project management capability. As defined by Pretorius, Steyn and Jordaan (2012) the term maturity in a project setting refers to a situation where an organization has standards and procedures in place to deal perfectly with its projects. An organization's PMM goes through various levels from lowest to highest. The basic premise is that the higher the PMM level the better the project performance (Richardson, 2012). Thus an organization ought to achieve a required level of PMM to ensure successful execution of its project. This is so because all project activities including M&E may be executed better with an organization's increasing PMM level.

The notion of PMM is operationalized differently by various authorities. For instance Grand and Pennypacker (2006) look at PMM in terms of the 10 project management knowledge areas of scope, time, cost, quality, human resource management, procurement, risk management, stakeholder, communication and integration, However such categorization has been criticized for being too complex in as far as measurement of maturity is concerned. To this end Hilson (2003) drawing from the Project Management Maturity Model (ProMMM) compresses the whole notion of PMM into four components namely, project management culture, project management process, project management experience, and project management application. In this study therefore the latter categorization of maturity was adopted on the basis of its clarity and simplicity. Thus project management culture, project management process, project management experience and project management application was the maturity variables. Each of these categories was measured based on four maturity levels as enshrined in the ProMMM namely: naïve, novice, normalized and natural levels where naïve entails the lowest maturity level while natural is the highest maturity level.

1.1.8 Project Management Culture

According to the PMI (2015) embracing a culture of project management is central for the success of an organization. Culture in this particular context is associated with an organization's recognition of the need for formal project management in the pursuit of an

organization's goals. Creating a culture that embraces project management is critical and it involves understanding of the value of project management, alignment of the projects and programs to an organization's strategy and having a mature project, program and portfolio management (Kerzner, 2003). The notion of culture as a PMM attribute is conceived as per the four levels enshrined in the ProMMM (Hilson, 2003). To this end the culture of an organization goes through naïve, novice, normal and natural levels of maturity. Under Naïve level, the culture of an organization is that which is resistant to change and does not recognize the need for project management. As for level two which is the novice level, the culture of an organization is that which does not fully appreciate the benefits of project management and is seen as unnecessary overhead while the culture of level three (normalized) is that which has accepted project management as a way of operating. Here the value of project management is recognized and the benefits of the same are expected. At level four (Natural level), the culture is proactive in terms of project management as project based culture is fully entrenched in the organization.

1.1.9 Project Management Process

This is the technical aspect of PMM and is concerned with how project management related issues are handled in an organization. On this particular one focus is on methods, tools and techniques that support project management (Hislson, 2003). The project management process maturity also goes through four levels as per the tenets of the ProMMM. In this regard, the naive level constitutes a project management process that is informal while novice level is characterized by adhoc project management processes with their effectiveness depending on a few individuals in the organization who might have gone through some formal project management training. At normal level of maturity, the tendency is to have formal and generic project management processes in place as the value of project management is recognized. Level four (natural level) of PMM is characterized by the implementation of the best practices of project management processes with updates and learning from previous projects.

1.1.10 Project Management Experience

The concept of experience is associated with what an organization knows and can do in terms of project management. This ultimately borders on the extent to which principles and practice of project management are understood by the organization (Hilson, 2003). Like the previous components of maturity, experience is also conceptualized in four levels as per the tenets of the ProMMM. In this connection organizations at the naïve level have no experience of project management. Thus the organization has no understanding of principles and practicalities of project management. Going forward to novice level, the organization experience vis-a-vis project management is limited mainly bordering on a few individuals who underwent formal project management training. At normalized level, the organization has adequate experience for formal project management undertaking. In this regard, the organization has adequate understanding regarding the theory and practice of project management. The expertise is adequate in the organization. Going into the highest level (natural level), all members of staff have an understanding of the theory and practice of project management. At this point project management is deeply entrenched in the organization.

1.1.11 Project Management Application

This refers to the extent to which project management principles are put into practice during the project execution (Hilson, 2003). Project Management Application is also conceptualized in four levels in line with the ProMMM. To this end, the lowest maturity level (Naïve) of an organization entails no application of project management principles during the project implementation process while level two (Novice) demonstrates some application of project management though inconsistent and patchy. At level three of maturity (Normalized), the application is there. It is routine and consistent across the projects. At level four (Naturalized) of project management, the application is widespread and has been fully internalized by the organization. The organization is very flexible in terms of application of project management process.

1.1.12 Digital Education Technology Project in Malawi

Malawi's educational system is characterized by numerous challenges that include high drop out among primary school pupils, high teacher pupil ratio as a result of increased enrolment due to free primary education and low achievement in literacy and numeracy. The Digital Education Technology Project was therefore introduced in Malawi as a three year project from 2015 to 2017. This was premised on the fact that technology aided instruction increases learner motivation (Rosas, 2003 cited in Pitchford 2015) and positive attitude (Ke, 2008, cited in Pitchford, 2015) towards pupil learning. Implemented by an International Organization and a London-based non-profit Organization that develops apps the project was aimed at improving quality of instruction in literacy and numeracy among standard one and two learners. To this end the Mobile Tablet Technology was used in classroom to allow for highly tailored and interactive learning platforms thereby enhancing pupil achievement in these two subjects. To realize this aim the project had three areas of focus namely children learning, teacher performance and technological performance and effectiveness. It was anticipated that focus on these three elements of the project would increase chances of enhanced pupil performance which was the ultimate aim of the project.

The project was designed in such a way that the International Organization was responsible for the management of the project, finance and compliance, building of the learning centers and Monitoring and Evaluation of the project. In addition the organization was responsible for the development of a teacher training module used to train teachers who were project implementers in standards one and two classes and project coordinators on the utilization of the Mobile Tablet Technology and Monitoring of the project. A London-based voluntary organization was responsible for the development of the educational software for the delivery of literacy and numeracy outcomes. It also supported the design and implementation of the solar system needed to charge the mobile tablets.

Literacy and numeracy assessments were conducted as a measure of the performance of the project. The assessments were done for standards one and two pupils. The project targeted 53 schools country wide with the ultimate goal of reaching out to all 5300 primary schools upon the decision to roll out the project.

1.2 Statement of the Problem

Malawi is among the developing countries in the world with an estimated population of 17million and a Gross Domestic Product (GDP) per capita of 338.48 USD (World Bank, 2017). Its ranking on Human Development Index (HDI) is 171 out of 189 (UNDP, 2018). In view of this the key sectors of the economy such as education, health, agriculture and energy have challenges as they are inadequately funded. In terms of education most of the educational indicators such as literacy and numeracy attainment at primary level are among the lowest in the world. For instance the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) survey of 2011 revealed that only 6% of Standard six pupils in Malawi were able to meet grade level competencies on English achievement test yet such a fit is supposed to be reached by standard four. In terms of numeracy performance among standard six learners the situation is equally not impressive as only 20.4% of the learners have reached the minimum level of numeracy (SACMEQ, 2017). Furthermore despite the fact that Malawi has gained significant strides in the area of pupil enrolment as a result of free primary education that was introduced in 1994, completion and repetition rates are worrisome. As reported by the UNESCO (2012), completion and repetition rates are at 45% and 19% respectively. Currently the statistics are at 50.9% for completion and 27.6% for repetition according to Government of Malawi Educational Management Information System (2016). On the same note 34% of pupils enrolled in standard one do not reach standard four indicating a low survival ratio. Additionally only 5% of Malawian cohort achieve the minimum learning level.

These statistics show that there are challenges in Malawi's primary education sector. In this regard, Malawi has numerous projects whose aim is to improve the quality of education at primary school level. One of these projects is the Unlocking Talent project which involves the use of Digital Education Technologies in particular Mobile Tablets aimed at boosting numeracy and literacy achievements for standards one and two pupils.

The use of Mobile Technology is important because mobile learning is accommodative and supportive of the learners' agency such that the learner can decide when, where and how they will learn hence mobile learning is critical in terms of in time and on demand learning (Khaddage, Muller & Flintoff, 2016). Despite Digital Education Technology being an important aspect in the enhancement of learning performance, the influence of the DET project in Malawi has not been as expected. In the area of numeracy performance it has been revealed that there is no significant difference in performance between schools that received the DET intervention and the control schools (Hubber, Pitchford & Chigeda, 2016). In terms of literacy performance the situation is different as schools that received the DET intervention outperformed the control schools entailing a significant difference in literacy performance between these two categories of schools (Hubber et.al, 2016). This entails that the DET intervention had more influence on literacy performance than on numeracy performance. The ideal situation is for the DET project to positively influence learners' performance in both numeracy and literacy (Pitchford, 2015) but as things stand the project is not working as expected.

It should be emphasized that this project had an M&E component with a financial backing of 400 000GB pounds. The role of monitoring and evaluation was to ensure that the project was implemented consistent with the design so that improvements were made in both literacy and numeracy performance hence the allocation of these financial resources. As contended by Kyalo et.al (2015) the role of M&E in the enhancement of project performance cannot be overemphasized as it is a continuous and periodic review whose rationale is to make sure that inputs, work schedules and outputs are proceeding as per project plan. Such a view is shared by Cloete, Rabie and De Coning (2014) who describe monitoring as a "systematic and continuous collecting and analyzing of information about the progress of a piece of work over time. It is a tool for identifying strengths and weaknesses in a piece of work and for providing the people responsible for the work with sufficient information to make the right decisions at the right time to improve quality" (p.5). Thus M&E is critical for enhancement of project performance.

It is therefore important that a study be conducted to investigate the influence of M&E processes on the performance of the DET project in terms of literacy and numeracy achievement among standard one and two learners. Studies that have been conducted in the area of M&E have described M&E as an important aspect to a project without linking it with performance of DET project as a dependent variable to gauge the percentage change that M&E brings to performance of project of this nature. For example Passy, Lafferriere, Ahmad, Bhowmik, Gross, Price, Resta and Shonfeld (2016), Masset and Haddad (2014) and Gildemyn (2014) have all underscored the importance of M&E but have ran short of linking it with performance of DET project. Thus there has been lack of experimental and correlational research studies to link M&E Processes of Planning, Implementation, Dissemination and Result Utilization with Performance of DET to determine their contribution. The need to undertake a correlational study guided by pragmatist philosophy was therefore crucial in determining the holistic influence (Loo and Lowe, 2011) of M&E processes on performance of DET project.

Owing to the fact that M&E Processes is a project management issue as stipulated by Richardson (2015) this study incorporated PMM as a moderating factor. Moderation analysis is ideal for addressing complex social phenomena of which performance of DET project is one of them as it is influenced by a myriad of factors. However no study has addressed PMM and its effect on the relationship between M&E Processes and DET project performance. Thus it would be critical to assess the PMM of the Project Implementing Organization to determine how this maturity interacted with the relationship between M&E processes and performance of DET project.

1.3 Purpose of the Study

The purpose of the study was to investigate the influence of M&E Processes on the performance of DET Project in Malawi and the moderating effect of PMM on this relationship.

1.4 Objectives of the Study

In order to achieve the purpose of the study, the study was guided by the following objectives:

1. To establish how planning for monitoring and evaluation influences the performance of Digital Education Technology Project in Malawi.
2. To determine the influence of implementation of monitoring and evaluation on performance of Digital Education Technology project in Malawi.
3. To establish the influence of dissemination of Monitoring and Evaluation results on the performance of Digital Education Technology project in Malawi
4. To determine the influence of utilization of Monitoring and Evaluation results on the performance of Digital Education Technology project in Malawi.
5. To determine the combined influence of Monitoring and Evaluation processes on the performance of Digital Education Technology project in Malawi.
6. To establish the influence of Project Management Maturity on the performance of Digital Education Technology project in Malawi.
7. To determine the moderating influence of Project Management Maturity on the relationship between monitoring and evaluation processes and performance of Digital Education Technology project in Malawi.

1.5 Research Questions

In order to address the purpose of the study the following research questions were addressed.

1. To what extent does planning for monitoring and evaluation influence the performance of Digital Education Technology project in Malawi?
2. To what level does implementation of Monitoring and Evaluation influence the performance of Digital Education Technology project Malawi?
3. How does Dissemination of Monitoring and Evaluation results influence the performance of Digital Education Technology project in Malawi
4. To what extent does Utilization of Monitoring and Evaluation Results influence the performance of Digital Education Technology project in Malawi?
5. To what level does the combined Monitoring and Evaluation Processes influence the performance of Digital Education Technology project in Malawi?
6. How does Project Management Maturity influence the performance of Digital Education Technology project in Malawi?
7. How does Project Management Maturity moderate the relationship between Monitoring and Evaluation processes and performance of Digital Education Technology project in Malawi?

1.6 Hypotheses of the Study

The following hypotheses explained the possible relationships as perceived by the study

1. **H_1**, Planning for Monitoring and Evaluation has a significant influence on the performance of Digital Education Technology project in Malawi.
2. **H_2**, Implementation of Monitoring and Evaluation has a significant influence on the performance of Digital Education Technology project in Malawi.
3. **H_3**, Dissemination of Monitoring and Evaluation Results has a significant influence on the performance of Digital Education Technology project in Malawi.
4. **H_4**, Utilization of Monitoring and Evaluation Results has a significant influence on the performance of Digital Education Technology project in Malawi.

5. **H_5**, the Combined Monitoring and Evaluation Processes have a significant influence on the performance of Digital Education Technology project in Malawi.
6. **H_6** Project Management Maturity has a significant influence on the performance of Digital Education Technology project in Malawi
7. **H_7** Project Management Maturity has a significant moderating influence on the relationship between Monitoring and Evaluation processes and performance of Digital Education Technology project in Malawi.

1.7 Significance of the Study

This study explored monitoring and evaluation processes and their influence on performance of digital educational technology project. As the study has established that M&E has a positive influence on performance of DET project, this would provide a justification to the organization for pumping resources into the monitoring and evaluation process. Furthermore any M&E capacity building initiatives of the organization may be justified as the study has documented that M&E is beneficial to project performance.

In view of the fact that M&E processes were presented as a framework that can be executed systematically, the study may be beneficial to the organization as it may realize how M&E components were executed in the organization and what influence did each have on the performance of the DET project. Since it has been established that Utilization of M&E results is the component that was executed better than all M&E components and that it had a higher influence on performance of DET project than all components, organization may therefore take this particular M&E aspect seriously and may also work to improve its execution and that of the others.

The study examined the influence of PMM on the relationship between M&E processes and performance of DET project and indeed found that the influence of M&E processes on performance of DET project depends on PMM. The organization may therefore embrace project management in order in order to catalyze the influence of M&E on project performance. Thus more investment may be put into project management.

As the study has established that M&E processes have a positive influence on project performance, this may encourage the Ministry of Education in Malawi to ensure that educational interventions are adequately monitored and evaluated to boost their influence on education attainment in Malawi. The study has established that the M&E processes were executed to a moderate extent hence there is still room for improvement.

The study has added empirical dimension to literature on Monitoring and Evaluation processes and performance of DET project. In view of this the study has contributed to the academic debate in the area of M&E thereby being useful as a scholarly resource**.**

1.8 Delimitations of the Study

The DET project was initially implemented in 53 public primary schools but in the process the number went up to 110 schools. However this study focused only on the 53 primary schools which started the project as these schools experienced the intervention during the entire project circle hence M&E was entrenched in these schools.

The study covered public primary schools only. This is because the DET project was only implemented in public primary schools hence it was logical to focus on schools that received the intervention.

1.9 Limitations of the Study

All the variables of the study were measured based on respondents' perceptions of the same. The quantification was therefore an approximation of the magnitude of these variables and not an absolute quantification. This limitation was mitigated by having a list of indicators under one construct. Thus a variety of components under one construct were addressed to ensure that the construct was adequately represented; a notion called sampling validity (Nachmias & Nachmias, 1996).

The targeted schools where the project was implemented were scattered across Malawi as a result the sampled participants were also scattered in the whole country. This made it difficult to reach out to all respondents during data collection as it required a lot of resources in terms of time and finances. Nevertheless the researcher employed research assistants who were instrumental in reaching out to some of the respondents.

The study was predominantly quantitative and one of the limitations of quantitative research is that it is too reductionist. It compresses social reality into numerical scores yet social reality is complex to be just reduced into numbers. Nevertheless the inclusion of the qualitative component was critical in providing in-depth information about the variables thereby complementing the quantitative data.

1.10 Assumptions of the Study

The study assumed that Monitoring and Evaluation processes have an influence on performance of DET project such that performance of DET project increases with increasing M&E processes. This assumption was proved to be true as the study established a significant positive influence of M&E processes on the performance of DET project.

The study further assumed that PMM moderates the relationship between M&E processes and performance of DET projects; an assumption that was found to be true as the study found out that the influence of M&E processes on the performance of DET project is moderated by PMM.

It was further assumed that participants would be cooperative during data collection. This was not entirely true as some participants were found to be uncooperative. They even declined to provide information because for them the DET project did not provide incentives such as monetary allowances. Nevertheless the proportion of participants that provided information was 89.75% which was beyond a 60% threshold; a minimum response rate required for social science research according to Richardson (2005).

1.11 Definitions of Significant Terms

Dissemination of Monitoring and Evaluation Results:	This is refers to the sharing of M&E results with project stakeholders.
Implementation of Monitoring and Evaluation:	This is seen as the execution of the M&E blue print on the ground. It is associated with putting the M&E plan into practice.
Monitoring and Evaluation:	This is seen as an objective assessment of an ongoing or completed project in terms of its design, implementation and results. Its aim is to improve the performance of the project.
Monitoring and Evaluation Processes:	Refers to the systematic approach to M&E that encompasses planning, implementation, dissemination and utilization of monitoring and evaluation results.
Performance of Digital Education Technology Projects:	This refers to the extent to which digital educational technology project achieved its objective in terms of promotion of literacy and numeracy attainment among standard 1 and 2 learners.
Planning for Monitoring and Evaluation:	This refers to the conceptualization of the M&E process. It involves determination of methods, resources and M&E activities that will catalyze the M&E undertaking.
Project Management Application:	This is the extent to which project management is put into practice by the institution.

Project Management culture:	Refers to the conviction of an organization regarding the value of project management. It focuses on the mindset, ethos and the belief structure of an organization
Project Management Experience:	Refers to what an organization knows and can do with respect to project management. Thus it is a measure of the extent to which project management principles are understood.
Project Management Maturity:	Is seen as the measure of an organization's capability to manage its projects.
Project management Process:	This is the adherence of an organization to formal project management procedures. It encompasses methods, tools and techniques available to support project management
Utilization of Monitoring and Evaluation Results:	This refers to the use of M&E results to improve project implementation, design, intervention and for resource mobilization

1.12 Organization of the Study

The study was organized into five chapters. Chapter one was the introduction and it covered the background of the study, statement of the problem, purpose of the study, research objectives, research questions, hypotheses, significance of the study, assumptions, limitations, delimitations and definitions of significant terms. Chapter two encompassed the literature for each variable and the relationship among the variables, theoretical underpinning guiding the study, conceptual framework, summary of literature review and the knowledge gaps. Chapter three comprised the methodological framework that guided the study. In this chapter research paradigm, research design, target population, sample size, sampling procedures, piloting, validity, reliability, data collection instruments and data analysis techniques were highlighted. Chapter four covered data analysis, presentation, interpretation and discussion of findings while chapter five focused on the summary of findings, conclusions, recommendations and suggestions for further studies.

CHAPTER TWO
REVIEW OF LITERATURE

2.1 Introduction

The aim of this chapter was to review literature concerning performance of digital educational technology projects and how it relates to monitoring and evaluation processes and project management maturity. The chapter drew on published articles, organizational reports and empirical research reports with an aim of presenting contesting view points of the variables under investigation. Firstly the chapter explored the dependent variable (performance of DET projects) followed by themes as per the objectives of the study. The chapter also explored theories informing the study and this was followed by the conceptual framework that demonstrated the relationships among the variables. Finally the chapter presented the knowledge gaps identified in literature and summary of literature.

2.2 Performance of Digital Education Technology Projects

The concept of project performance has been operationalized differently by various authorities. According to Kerzner (2003) project performance has to do with completing the project a) within the allocated time period b) within the budgeted cost c) at the proper performance or specification level d) with acceptance by the customer/ user, with minimum or mutually agreed upon scope changes e) without disturbing the main work flow of the organization and without changing the corporate culture. Elsewhere, Gitonga (2010) defines a project as an endeavor with coordinated set of unique non repetitive and temporary activities undertaken to create a unique product, service, or process for target beneficiaries within the constraints of schedule, budget, quality and scope. To this end Gitonga outlines project performance objectives against which one working on a project is judged. In this connection four project performance objectives are outlined as follows: budget, time, quality and scope. Thus Gitonga and Kerzner are in agreement on some of the project performance indicators such as budget, time, scope and quality. They differ on acceptance by the users, disturbance to the main work flow of an organization and adherence to the corporate culture. As the ultimate goal of the DET project was to enhance performance in literacy and numeracy, the measurement of the performance of the project

was based on quality, time and scope as these are indicators of project performance as asserted by Kerzner (2003).

Globally there are numerous projects in a wide range of sectors that have been implemented with the hope of bringing about desired changes as per their intended goals. However as contended by Richardson (2015) most organizations globally do not experience project success rates of above 50%. Richardson submits that countless number of case studies in the last 30 years point to the fact that approximately 50% of projects undertaken have been late and / or exceed budget; and approximately 25% are cancelled before completion. Most of these projects are affected by project management challenges leading to their failure. Such a view is confirmed by Jergeas and Lozon (2015) in a study entitled "performance challenges of mega projects in the energy industry sector" in which they posit that large capital projects in Alberta are experiencing cost overruns and schedule delays. Using online survey research methodology they established that 44% of industry leaders felt that cost overruns are between 10-30% of budget while 43% submitted that there is a misalignment between management and the project team. It should be submitted that digital education technology projects are equally affected by performance challenges. As stipulated by Karolcik, Cipkova and Kinchin (2016) many projects in this area are failing because of teachers' lack of confidence in the use of technologies and resistance to change. Such a position is echoed by Khaddage, Muller and Flintiff (2016) when they contend that the adoption of DET technologies in the formal classrooms has been less impressive as many teachers in schools and colleges are reluctant to allow their widespread access. Furthermore Carr (2005) maintains that lack of user involvement in the designing of education technology projects is among the factors that impede the success of these projects as there is a mismatch between the content and the needs of the learners.

The issue of challenges in project performance has also been echoed by the Standish Survey group (2011) cited in Richardson (2015). The survey revealed that project delays and cost overruns have not improved since 2002 as shown in Table 2.1.

Table 2.1

Project Success Trend in Alberta: Canada

Year	Budget	Time
2002	43%	82%
2004	56%	84%
2006	47%	72%
2008	54%	79%
2010	46%	71%

Source: Adapted from Standish, 2011.

It is clear from Table 2.1 that project performance challenges have generally persisted in the last decade. This entails that project failure is a critical issue and measures ought to be put in place in order to rectify the situation. According to Table 2.1 time and budget are the main challenges affecting performance of projects in the last 10 years. It should however be stressed that in the case of digital technology projects, challenges affecting the performance of these projects are based on the conservative culture entrenched in the schools. As reported by Lichy, Khvatova and Pon (2013) integrating technology in teaching and learning in France and Russia is stifled by the conservative settings of the institutions as actors in the schools are resistant to change. Such observation is in line with Okumus, Bilgihan, Ozturk and Zhao (2017) who reported that the performance of Information Technology (IT) projects is among other things impeded by institutional resistance to change and time delays in terms of implementation.

Further sentiments regarding project failure have been provided by Mir and Pinnington (2013). In their study entitled "Exploring the value of project management: Linking project management performance to project success" they argue that in spite of advancement in project management processes, tools and systems project success has not significantly improved. This entails that despite organizations' investment in project management to enhance project performance, there is little value that is added towards project performance including the performance of DET project.

Project performance challenges have not spared World Bank funded projects in Africa. As stated by Dugger (2007) cited in Ika (2012) the World Bank has invested over 5 billion US dollars in over 700 projects in Africa over the past 20 years however its project

failure rate is over 50%. Similarly the International Finance Corporation, a private arm of the World Bank revealed that half of its projects in Africa are unsuccessful (Associate Press, 2007 cited in Ika 2012). These findings are echoed by Ochara, Kandiri and Johnson (2013) in their qualitative enquiry in which they revealed that IT projects in Africa especially the educational technology projects perform unconvincingly because of implementation challenges which are due to appeasement of external stakeholders and symbolic participation in these projects to portray a picture of a modern institution. From this it can be concluded that performance of projects including DET projects is a burning issue as even the multilateral projects are marred by performance challenges. Scientific enquiry aimed at shading more light regarding performance of these projects is therefore crucial.

The issue of project performance is an intricate one to the extent that it is problematic to explain its cause. Against this background several researchers have conducted studies aimed at identifying determinants of project success. In a study by Ogwueleka (2013) in which critical success factors influencing project performance in Nigeria were investigated, objective management, management of design, technical factors, top management support and risk management were identified as critical factors influencing project success. In this study, a survey design with 188 sampled participants was used. As the sample size was large enough, it may be concluded that the results were representative. However monitoring and evaluation process was not considered as a factor influencing performance despite it being aimed at improvement of project performance. Furthermore the projects in question were not about education and in particular digital educational technology projects.

A study that was conducted in Malaysia by Alias, Zawawi and Yusufu (2014) in which they developed a conceptual framework determining critical success factors of project management revealed factors that are central to project performance. In this study five factors namely: project management action, project procedures, human factors, external issues and project related factors were identified as critical to project success. Nevertheless these factors were identified from literature and were not empirical in nature.

There is therefore a possibility that if these factors were empirically investigated to predict project success the situation could have been different as some of them might not have been critical. It should also be stated here that the conceptual framework did not consider M&E processes as a factor of project performance. In addition the projects that were examined were not particular to education let alone digital education in Malawi.

Further research regarding determinants of project performance was conducted in Taiwan by Chen (2012) in which predictors of project performance and likelihood of success were investigated. In this longitudinal study of 121 capital projects it was established that scope, quality, team, communication, risk and change variables were significant predictors of project success. Furthermore the variables were found to have strong discriminatory power to predict project success and failure. It should however be pointed out that M&E process was not considered among the predictors. Additionally the projects under investigation were not in education and had nothing to do with digital educational technology in Malawi.

Still in Asia a study conducted by Babu and Sudhakar (2015) on critical success factors influencing performance of infrastructural projects in India revealed factors that are central to the success of a construction project. Based on the review of literature the study established factors related to the manager's performance, factors related to organization, factors related to the project and factors related to the environment as the critical factors influencing project performance. Here again no mention was made with respect to M&E processes as a critical factor. Moreover the study was not empirical in nature. In addition the projects were in construction industry and not in digital educational technology.

In the energy sector, a study conducted by Kariungi (2014) in which determinants of timely completion of projects in Kenya with a case of Kenya Power and Lighting Company were investigated, it was established that procurement delays, timely availability of funds and climatic factors were the main determinants of timely completion of projects. Pearson's Product Moment correlation coefficient was used as a data analysis statistical test. The claims could have been stronger if regression analysis was used to incorporate the

notion of prediction. Here again, M&E processes was not incorporated as a factor. Furthermore the projects in question were in energy and not in the area of DET.

In view of the foregoing review, it is evident that project performance is determined by a myriad of factors. However it is clear that M&E processes is not among the factors yet as already emphasized M&E is conducted for program improvement. It was therefore important that an empirical investigation linking M&E processes and performance of DET project be conducted with the hope of adding to the discourse of critical success factors of project performance.

2.3 Monitoring and Evaluation Processes

The concept of M&E is given priority in a variety of projects. This is against the background of the fact that M&E is a continuous function that uses systematic collection of data on project indicators to provide project management and the main stakeholders with the information regarding the progress of the project (Gitonga, 2010). M&E is therefore executed to measure project implementation so that corrective action can be taken to control the project. The rationale is to ensure that the project is implemented as per plan so that it performs according to the set objectives within the constraints of time, scope, cost and quality. It is for this reason that M&E is a demanding process such that it requires routine gathering of information on all aspects of the project.

The need to undertake M&E has been embraced in public and Non-Governmental sectors. In Chile for example, the use of monitoring and evaluation results in the civil service is given consideration such that Chile is one of the leading countries in the world in terms of monitoring and evaluation undertaking in the civil service (World Bank, 2011). In Kenya the institutionalization of monitoring and evaluation has been effected at National and County government levels as a result of various constitutional provisions in support of this institutionalization at both levels of governance (Ministry of Devolution, 2017). In South Africa the ministry of monitoring and evaluation was established thereby underscoring the seriousness being placed on monitoring and evaluation in the South African civil service (Cloete et.al, 2014). In Malawi, the cabinet subcommittee on project

implementation was established in 2016 with the aim of monitoring the implementation of government funded projects to ensure that projects are delivered within time, scope, cost and quality specification (Malawi National Budget, 2017). In terms of the non-governmental sector, substantial financial resources are allocated to monitoring and evaluation indicating how serious monitoring and evaluation undertaking is considered. On this particular one the DET project being implemented in Malawi was allocated 400,000 GBP for research and monitoring and evaluation activities (Pitchford, 2015). In view of the foregoing, it is clear that M&E is placed on the agenda as evidenced by political and monetary commitments associated with this aspect.

M&E being an important endevour has to be methodical in nature. In view of this M&E is a process that requires planning, implementation, results dissemination and result utilization (Kyalo et.al, 2015). These processes are critical if effective M&E which may have a meaningful contribution to the performance of DET project is to be realized. This perspective is also shared by the Joint Committee on Standards for Educational monitoring and Evaluation (2011) when they *inter alia* underscore the need for accuracy (planning and implementation) and utility (use of monitoring and evaluation results) when embarking on monitoring and evaluation. Each of the elements that constitute M&E process and its relationship with performance of digital educational technology is therefore discussed hereunder.

2.3.1 Planning for Monitoring and Evaluation and Performance of Digital Education Technology Projects

The role played by planning for M&E in a project is critical. It is against this background that Chaplowe (2008) highlights, log frame, indicators matrix, data collection and analysis as components that should be considered when planning for a robust M&E system that would enhance project performance in USA. However the study is unclear about the contribution these components of planning would make to performance of DET projects. The research design used did not factor in performance of DET projects as a dependent variable in order to validate these components of planning. Correlational study

design may have strengthen this research as it would have established the extent to which each of the components of M&E planning contributes to project performance (Field, 2013).

The notion of M&E planning is complex to the extent that it needs an articulated set of guidelines. It is for this reason that Hobson, Mayne and Halmiton (2013) stipulate procedural steps needed for effective execution of M&E. These include establishment of the reason behind M&E undertaking, agreement on the standards M&E should meet, determination of the priority areas associated with the M&E exercise, deciding on the stakeholders who will be involved in the monitoring, determination of key issues and questions to investigate during the M&E undertaking, determination of the kind of information (quantitative or qualitative) to collect, deciding on the data collection methods and determination of the data analysis techniques to be employed. It should be noted that the steps are detailed and compressive aimed at ensuring a successful M&E undertaking. However linkage to performance of DET projects has not been established. Furthermore the nature and magnitude of influence these steps can make on DET project performance have not been established. It should be submitted here that the study used a qualitative approach which although is important for a deeper understanding of a phenomenon (Creswell, 2014) yields subjective knowledge claims which may be deficient in terms of reliability and does not determine how variable one influences the other. This study therefore included a quantitative dimension which was central in establishing the influence of planning (for M&E) on DET project performance. Using the regression analysis as a data analysis strategy such a determination of influence was achieved (Field, 2013).

Planning for M&E has been deemed critical as without proper planning the likelihood of positive project process and outcomes is negatively affected. This assertion is echoed by Kidombo et.al., (2013) when they describe planning as an important factor that is a prerequisite for success in an organization. Consistent with this assertion the Umhlaba Development Services (2017) highlights steps that should be undertaken to ensure a successful M&E which can improve the project in terms of process and outcomes. The steps include establishment of the purpose and scope of M&E, identification of what to be monitored in terms of indicators and performance questions, how the information will be gathered, how will sense be made out of the information and capacity to do M&E. The foregoing steps are also in line with the guidelines for project monitoring as stipulated by Red Cross and Crescent (2011). On this particular one, the Red Cross and Crescent highlight identification of purpose and scope of M&E, plan for data collection and management and plan for data analysis as some of the steps that should be included in the M&E process.

It should be emphasized that the foregoing studies used secondary data as a methodology which is limited as it does not take into account changing contextual factors. In this regard the inclusion of primary data could have strengthened the knowledge claims made in these studies. In addition the studies did not have a dependent variable in the form of performance of DET projects to determine how these M&E guidelines influence the project performance. Such a design would have strengthened the knowledge claims being advanced in these studies.

Planning for M&E has been a subject of intense scrutiny to the extent that some authorities have suggested components that can guide proper planning for monitoring and evaluation. For instance the UNDP (2009) in its publication entitled "handbook on planning, monitoring and evaluating for development results" has provided four components which are instrumental to ensure proper planning for monitoring and evaluation. The first component is M&E framework which serves as a plan to ensure that M&E is done effectively and it includes the clarification of what is to be monitored, the activities that need to be monitored, who is responsible for monitoring activities, timing of

monitoring activities and methods to be adopted for the monitoring. The second aspect is about resources for monitoring as inadequate resources lead to poor quality monitoring. On this particular one it is stipulated that both financial and human resources should be within the overall cost of the agreed upon results; a notion that is echoed by Richardson (2015). The third component has to do with the engagement of stakeholders in monitoring. These stakeholders are crucial in determining the information that should be realized from monitoring undertaking; an assertion that is also within the confines of participatory monitoring and evaluation (Cousins & Chouinard, 2012). This is important as it helps to delineate the scope of the monitoring process. The stakeholders are also critical in ensuring the alignment of programmatic activities and the monitoring undertaking so that useful information is generated at the end of the monitoring process. The fourth component borders on capacity for monitoring owing to the fact that monitoring is a technical endevour such that appropriate expertise is needed for such activities as design of data collection instruments, data collection itself and data analysis and interpretation among others. This view is confirmed by Cloete et al.,(2014) when they highlight research methods expertise as one of the competencies needed for monitoring and evaluation undertaking.

A closer examination of the components highlighted seems to suggest that these are indeed important elements to ensure a successful monitoring endevour. However the absence of linking the components to the DET project performance using scientific methods of investigation renders the relevance of the components speculative in nature. Thus the significance of empirical investigation in this regard cannot be overemphasized.

The notion of planning while taken seriously in various organizations has been found to have no influence on organizational performance. For instance Falshaw, Glaister and Tatoglu (2005) in their study entitled “Evidence on Formal Strategic Planning and Company performance” it was established that strategic planning has no influence on the performance of 113 UK companies. These findings are confirmed by French, Kelly and Harrison (2004) in their study entitled, “the role of strategic planning in the performance of small professional service firms” in which they concluded based on a sample of 127 regional professional firms in New South Wales and Australia that there is no significant

relationship between strategic planning and performance of firms as defined by sales growth. Therefore granted these findings, it may imply that even if monitoring and evaluation is planned for, there is a probability that it cannot have an influence on DET project performance. It should be submitted here that these studies were rigorous as random sampling and multiple regression analysis were used in both cases thereby rendering the findings credible. However performance being alluded to here was about a firm and an organization, and not a project. There is a possibility that such findings may not be applicable in a DET project setting.

Elsewhere, planning has been found to have a positive influence on operations performance. In their study entitled "Planning, capabilities, and performance: an integrated value approach" Bronzo, De Oliveira and McCormack (2012) found out that planning and capabilities have a joint influence on the operational performance of 164 Brazilian Industrial companies. The model that was tested revealed that 84% of operational performance is explained by planning and capabilities. This entails that planning is a critical element in as far as operational performance is concerned. Such findings contradict studies by Falshaw et al., (2005); and French and Harrison (2004) in which a non-significant relationship was found between strategic planning and performance. It should however be posited that planning being referred to here is not distinct to M&E. Furthermore the dependent variable performance is not about DET projects.

The fact that planning has an influence on project performance has also been established in IT projects. In a study by Aladwani (2003) entitled "IT project uncertainty and Success: An Empirical Investigation from Kuwait" in which 42 IT projects were sampled, it was established that project planning has a significant influence on success of IT project. Using multiple regression analysis it was demonstrated that an increase of project planning by 1 unit leads to a 0.56 unit of project success. It is therefore clear from this publication that planning is critical to project success as such monitoring and evaluation should not be exempted from it. As posited by Kidombo et al., (2013) planning is important as it determines what needs to be done, how it should be done, why it should be done, when to do it, where to do it and who should implement it. Subjecting monitoring

and evaluation to these questions would therefore result in a meaningful M&E undertaking that may add value to performance of DET projects.

2.3.2 Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Projects

Monitoring and Evaluation exercise is demanding as such proper implementation is needed to ensure that its blue print is executed effectively. It is in this regard that UNDP (2009) highlights guidelines that should be followed for effective implementation of M&E which include 1) understanding of M&E policies applicable to the institution; relevant key roles and responsibilities associated with the M&E process, tools and approaches 2) reinforcing and elaborating initial M&E framework 3) implementation of monitoring actions 4) use of M&E data for decision making. It should be argued here that much as the guidelines have been laid down, their influence on project performance let alone performance of DET projects has not been established. A cross sectional survey or experimental research design with DET project performance as a dependent variable may strengthen the conclusions made in this publication (Creswell, 2014).

As highlighted earlier on M&E is a complex endevour hence it needs a wide range of inputs to ensure its successful implementation. In a situation that inputs are inadequate it is difficult to effectively implement any M&E undertaking. Against this background the Australian government (2016) stipulates factors that can hinder effective implementation of monitoring and evaluation. These factors are inadequate resources which among other things can impede data collection and management, lack of a systematic planning approach which may lead to uncoordinated monitoring and evaluation implementation process, irrelevant data that is not useful to the program in terms of measurement of indicators. Although these factors can negatively influence M&E execution, it should be argued that without evidence of a poorly performing project in view of the said factors, the claim remains speculative. In this regard an investigation that should link these factors of M&E to performance of digital educational technology projects may go a long way in building a strong claim about these factors in a monitoring and evaluation undertaking.

The notion of strategy implementation has been described as a critical aspect in the performance measurement of a firm. In a study conducted in Italy by Micheli, Mura and Agliati (2011) it was revealed that effective strategy implementation can be enhanced with the introduction of Information Technology (IT) systems in the areas of data collection and analysis. Although the study did not specifically focus on M&E strategy implementation, it can be concluded that effective M&E implementation strategy can best be executed with increasing information technology application. It is believed that with IT, M&E can effectively be implemented and may meaningfully contribute to DET project performance. It should however be stressed that implementation of IT systems in an organization needs to consider structural and technical conditions of an organization. As revealed by Madritsch and May (2009) in their qualitative study entitled "Successful IT implementation in Facility Management" effective implementation of IT systems in Germany, Austria and Switzerland requires professional project management and coordination within the organization. This entails that effective implementation of M&E may also require coordination and professional project management.

Elsewhere strategy implementation has been established as a mediating factor on determinants of Company performance. Kohtamaki, Kraus, Makela, and Ronnko (2011) in their study based on 160 IT firms in Finland entitled "The role of personnel commitment to Strategy Implementation and Organizational learning within the relationship between strategic planning and company performance" it was established that strategy implementation mediates the relationship between strategic planning and company performance. It was however emphasized that personnel must be committed to strategy implementation if this mediating relationship is to exist. On the basis of this submission therefore, it can be concluded that implementation of M&E might also need personnel commitment for it to have some influence on DET project performance. M&E undertaking is a complex task hence the need for personnel commitment during implementation cannot be overemphasized.

As implementation of M&E is associated with putting the M&E blue print on the ground, it is critical that M&E activities be coordinated and that all stakeholders should fulfill their roles and responsibilities so that M&E implementation can become a fruitful

exercise (Chikati, 2009). Most importantly appropriate data should be collected and suitable data analysis techniques should be used to make sense of the data. It is for this reason that coordination of M&E activities, fulfillment of responsibilities, appropriateness of data collected and suitability of data analysis techniques are important elements of M&E implementation.

2.3.3 Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Projects

M&E result dissemination is associated with sharing results with stakeholders concerned with the M&E process. This is particularly important as M&E is a multi-stakeholder endevour each of which has their role to play in the monitoring and evaluation process and have interests regarding the progress of the project (Mertens & Wilson, 2012). It is therefore anticipated that M&E which can inform DET project performance can be achieved if there is adequate communication of project information in the M&E process. For instance in a study entitled "Communication and Performance in software development projects" ,Brodbeck (2001) revealed that communication has a positive influence on performance of 29 software development projects from 17 organizations in Germany and Switzerland. Using multiple regression analysis it was established that in a situation where life cycle stage, project methods and user satisfaction together predict 42%, project communication predicts an additional 14% of project performance. This entails that project communication is a fundamental element for project performance and dissemination of M&E results being an aspect of communication is no exception. But this study was conducted in Germany and Switzerland; countries that are developed and are advanced in terms of technology. This context is different from Malawi as it is a developing country and is limited in terms of technology. Performance of DET projects is therefore likely to be different in these two different contexts.

In the context of projects involving multinational companies, communication amongst the project partners has been described as an important endevour. In a study by Badir, Buchel and Tucci (2012) entitled "A conceptual framework work of the impact of project Team and leader empowerment on communication and performance" in which a

qualitative case study methodology involving three Switzerland based companies was used, it was concluded that communication amongst the project partners moderates the influence of team and leadership empowerment on project performance. Thus it was claimed that the influence of team and leadership empowerment on project performance is dependent on the level of communication of project information between the project partners. As M&E result is project information, it can be argued that M&E will have an influence on performance of DET project if results are communicated or disseminated to the project stakeholders. However it should be submitted that since the study used qualitative research methodology to establish that communication is a moderator, it ran short of establishing the magnitude of moderation as qualitative methodologies have no provisions for quantification hence the moderation claim lacks objectivity. It is therefore important that such quantification be made so that project stakeholders can be aware of the amount of benefits that can be accrued from communication of M&E results.

In view of the fact that communication of M&E results is important in a project Hobson, Mayne and Hamilton (2013) in their article entitled "a step by step guide to monitoring and evaluation" emphasize the importance of communicating results to relevant project stakeholders in Britain by providing a framework of communication which include the following elements 1) deciding on key audience 2) tailoring the results to key stakeholders 3) drawing out key lessons from the results for key stakeholders. It should be stressed that the framework of communication above is critical and its importance is echoed by Project Management Institute (2013) when they describe communication as one of the crucial success factors of project performance. Nevertheless the study did not link the notion of communication to performance of DET projects. In other words the benefits in as far as DET project performance is concerned that can be accrued from the framework in question are not clear. This is in part due to the fact that the qualitative research methodology which was employed in the determination of the communication framework epistemologically has no provision of relationships among variables (Bryman, 2008) which is critical in determining influence of variables on each other. A quantitative investigation that can provide insights on the influence of the framework of communication on project

performance would be important to determine the value of the proposed communication framework during the M&E process.

Related to the foregoing, the value of communicating M&E results has been emphasized in monitoring and evaluation literature. For instance Umhlaba Development Services (2017) contends that sharing of M&E results is important to promote accountability and motivate stakeholders for action. Such a claim is echoed by Richardson (2015) who concludes that communication problems are amongst the reasons behind project failure. Furthermore communicating M&E results ensures that results are correct as feedback that will be obtained from the communication will be used to improve the credibility of the results. On the same note the notion of dissemination of monitoring and evaluation findings has been supported by UNDP (2009) as it provides methods that should be employed during dissemination and they include; printed reports, PDF copies of the results shared on internal and external internet sites and the media. However when all is said and done, the contribution that M&E result dissemination can make to the success of the project is limited. In this regard justifying the expenditure that is allocated to monitoring result dissemination may lack a scientific basis. Research designs such as causal comparative or cross sectional survey with performance of DET projects as a dependent variable may be critical as they would provide in quantitative terms the contribution M&E result dissemination would make to a project.

Considering the fact that M&E result dissemination as a communication issue is demanding, the need to plan for the exercise cannot be over emphasized. As argued by Adamchak, Bond, Maclaren, Magnan and Nelson (2000) M&E result dissemination planning should take into consideration budget available, the cost of preparing and producing dissemination activities and who is responsible for carrying out the activities. It is through the consideration of these elements that result dissemination may be a successful venture. However it should be argued that the benefits of including the mentioned aspects when planning for dissemination may remain speculative in nature unless a pragmatist (combination of positivism and constructivism) approach of investigation that links result dissemination and DET project performance is undertaken. The knowledge claims that

would be made from such an investigation may be stronger and might validate the need to invest in result dissemination as an aspect of M&E process as both quantitative and qualitative approaches would be used.

From the review it is clear that dissemination of M&E results is a crucial enterprise as such stakeholder involvement is needed and that there is need to come up with a comprehensive dissemination plan. Furthermore feedback from the dissemination exercise is important as it can be used to improve the quality of M&E results. In view of this stakeholder participation, dissemination plan and use of dissemination feedback are critical elements associated with M&E result dissemination.

2.3.4 Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Projects

The notion of result utilization is critical as it involves putting M&E results into use. As argued by Patton (2008) an evaluation can be strong in terms of design and methodology however if the results are not used, it remains a bad evaluation. Indeed as the World Bank stipulates "the value of monitoring and evaluation does not come simply from conducting monitoring and evaluation or having such information available but from using the information to help improve government performance"p.1 (Mackay, 2007 cited in Barca & Carraro, 2013). This implies that the significance of monitoring and evaluation results utilization is non-negotiable and every effort should be put in place to ensure that M&E results are used.

Despite M&E result utilization being such an important element, scholarship that demonstrates the importance of result utilization in as far as project performance is concerned is limited. For instance Kithinji (2015) in a study entitled "Professional Development in Monitoring and Evaluation and Result Utilization in Meru Region in Kenya" established that professional development in monitoring and evaluation has a positive influence on result utilization. On the same note Gamba (2016) in a publication entitled "factors influencing the utilization of monitoring and evaluation findings in implementation of malaria control programs in Mukono District, Uganda" established that result utilization is influenced by communication of monitoring and evaluation findings,

timeliness and decision making. Both Kithinji and Gama used descriptive survey design and multiple regression analysis to determine the factors influencing result utilization hence the studies were methodologically strong. However both studies did not go further in determining what will happen to project performance if monitoring and evaluation results are used which is the area this study intends to explore in the context of DET project. It should be stated here that M&E result utilization is not an end in itself but a means to promote project success.

Elsewhere Adamchak et al., (2000) have highlighted reasons why M&E result utilization is important to a program. Firstly they contend that M&E results help to improve project interventions as they put the project stuff in a learning mode as they understand how and why the program is working. Secondly they posit that M&E results help the project staff to lobby for extra resources in view of the fact that M&E results are instrumental in shaping donors' decisions regarding allocation of resources in terms of what to fund. Thirdly M&E results lead to changes in project implementation since these results are critical in early identification of problems which is a basis for timely corrective action. It is clear from the foregoing that the importance of result utilization is not grounded in primary data. Furthermore the magnitude of influence the said importance has on the DET project performance is not demonstrated. Thus improvements in the study design to provide for the quantification of the variables and their influence on a project can be a stronger methodology.

Various ways through which M&E results can be used in a project have been articulated. M&E results are used for validating the project logic to determine whether the theory of change is relevant to the project or not; also M&E results bring to the fore emerging issues from project implementation including challenges, opportunities and risks thereby informing the strategies for managing the same (UNDP, 2009). In addition as argued by Preskill and Caracelli (1997) cited in Gildemyn (2014) M&E results are used for program improvement and to provide information for decision making. As much as these aspects of result utilization are important in a project, it should be submitted that their influence on the performance of a DET project has not been addressed as the studies methodologically were not guided by positivism as a philosophical underpinning. As argued by Creswell (2014) positivism is associated with determining cause and effect. Thus using this approach the various ways through which results are utilized can have their influence on project performance determined. On this note, claims about the relevance of using M&E results can be well grounded. Thus, in the absence of an investigation linking ways of M&E result utilization and performance of DET project, M&E will continue to be regarded as unaffordable luxury and an administrative burden **(**Hobson et al., 2013).

In education, monitoring has been regarded as an instrumental undertaking. As argued by Korilaki (2006) in an article entitled "an enlightened use of educational monitoring in Greece" educational monitoring is critical to alleviating educational and social inequalities but this relies on both attainment and progress criteria as these bring to the fore different aspects of educational inadequacies. It is therefore clear from the foregoing that the use of M&E results is central to alleviating educational disparities. It should however be submitted that such a claim was based on a general review of the Greek situation. There was no primary data that was collected to arrive at that claim. Furthermore the study is not clear as to how M&E can lead to an alleviation of educational and social inequalities.

With respect to higher education the concept of higher education monitoring has been brought into monitoring and evaluation discourse to refer to a process that uses modern information technology to collect and analyze data continually as a basis for value judgments and scientific decision making regarding the status of higher education (Zhanjun, Waifeng & Jiangbo, 2016). Thus the purpose of higher education monitoring is for continual improvements and adaptation to systemic changes and governance reforms. This entails that higher education institutions that undergo higher education monitoring process may perform better. It should however be pointed out that the role of higher educational monitoring as a catalyst for institutional improvement has not been based on empirical investigation. It has mainly been based on the review of secondary scholarly resources. In this regard the empirical study on the relationship between use of higher educational monitoring results and project performance remains critical and it is this area that this study intends to explore.

In the context of manufacturing industries the relationship between environmental monitoring and organizational performance in terms of financial and marketing performance has been established. In a study by Green, Zelbst, Bhadauria and Meacham (2011) in which structural equation modeling was used it was established that environmental monitoring has a positive impact on organizational performance. An examination of the mechanisms behind that relationship borders on the utility of monitoring results as it is contended that monitoring provides information needed for the control of implementation of environmental sustainability programs. It should be pointed out that the study was rigorous in terms of methodology as structural equation modeling was used which is a robust statistical test hence the results are credible. However the study was in manufacturing industries which are profit oriented hence the situation might be different with DET project as it is non-profit making in nature. Nevertheless the study should be credited for empirically linking M&E and project performance.

In view of the going, it is clear that assertions pertaining to the role of M&E results utilization in the promotion of project performance have been advanced. However it should mentioned that contrary opinions regarding the role of M&E results in project performance

have also been brought to the fore. For example Brandon and Singh (2009) as cited in Mertens and Wilson (2012) reviewed evaluation studies that focused on M&E result utilization unfortunately they did not find evidence indicating that the evaluation findings were utilized. This suggests that claims of positive influence M&E have on project performance might lack empirical grounding to substantiate.

2.4 Project Management Maturity and Performance of Digital Education Technology Projects

There is a mixed corpus of evidence linking PMM and project performance. Some authorities argue that project management does little to promote project performance while others contend that PMM is critical in enhancing project performance. In the following section, a review of the link between PMM and project performance has been articulated.

Bourne and Tuffley (2007) as cited in Demir and Kocabs (2010) have emphasized the critical role PMM plays in the enhancement of project performance. They argue that organizations which improve their PMM gain improved schedule and budget predictability; improved cycled time; increased productivity, improved quality, customer satisfaction, employee morale, increased return on investment and decreased cost of quality. On the basis of this submission it can be concluded that PMM is beneficial to project performance and this includes DET project performance. Organizations are therefore justified to invest in PMM.

Further evidence on the relationship between project management and project success has been established in United Arab Emirates (UAE). In their paper entitled "exploring the value of project management: Linking project management performance and project success" in which a descriptive survey design was used, Mir and Pinnington (2014) established a statistically significant positive relationship between Project Management performance and project success. The results indicated that project management performance explained 44.9% of the variance in project success which entails that by enhancing project management performance, there is an increased likelihood of having a successful project. This finding entails that if an organization is mature in terms

of project management, it stands to benefit more from project management. Mir and Pinnington position on the relationship between project management and project performance has been echoed by Backlund, Chroneer and Sundqvisit (2014) when they conclude that organizations with higher PMM levels are expected to be successful in terms of project effectiveness and efficiency. In a related development Brooks and Clark (2009) emphasize the importance of Project Management Maturity Models (ProMMMs) when they stipulate that the whole concept of PMM is to improve project performance. However they are conscious with this view posting that there is little empirical evidence to substantiate this claim. In view of the foregoing it is clear that project management maturity is critical for project success hence if organizations implementing DET project is mature, the performance of DET project can be enhanced.

More evidence on the relationship between application of project maturity models and performance of information technology projects has been provided by Berssneti, Carvalho and Muscat (2012). Using a quantitative approach in which a survey of 51 professionals was adopted, a positive correlation was established between PMM level and meeting of stakeholders' demands. On the basis of this evidence, PMM is an endeavor worth pursuing by organizations as it is only a well performing project that can meet the demands of the stakeholders.

As highlighted earlier the evidence regarding project management and project performance is mixed. While some scholars have argued about the positive relationship between PMM and project performance some have argued that PMM has no bearing on project performance. For instance in a survey based research with 86 project professionals from various US service and manufacturing organizations by Yazic (2009) in which he was investigating the role of PMM and organizational culture in perceived performance it was established that there is no significant relationship between PMM and project performance. Similarly Ibbs and Kwak (2000) as cited in Yazic (2009) established a statistically insignificant correlation between PMM and project success based on schedule and cost performance.

Furthermore Jugdev and Thomas (2002) again cited in Yazic (2009) did not find a significant correlation between process capability and project success of many maturity models. In a related development Nicholas et al. (2012) contends that higher level of PMM does not necessarily guarantee project success. Thus they concur with Rodriguez and Evrard (2004) cited in Pretorius et al. (2012) who argue that project failures are often beyond the influence of the project manager but as a result of organizational aspects beyond the realm of project manager. Additionally in a study conducted in South Africa by Labuschagne et al. (2008) cited in Pretorius et al. (2012), it was found out that there is no significant correlation between project success and maturity level of an ICT organization. This view is confirmed by Richardson (2015) when he contends that creating a mature project environment is a daunting task and does not assure project success. Similar evidence on the lack of connection between PMM and project success was found in Southern Africa. On this particular one Pretorius, Steyn and Jordaan (2012) established that there is no significant relationship between PMM levels and project success. It should be noted here that Kruskal Wallis, a non-parametric test was used here. Non parametric tests are less robust than parametric ones implying that this claim may not be strong.

In view of the foregoing it is clear that there is no agreement among scholars on the relationship between PMM and project performance. In this regard it is important that further studies be conducted with the hope of establishing a clearer relationship between PMM and project success. This is because a number of organizations are continuing to invest in project management despite the fact that the evidence of its value on project performance is mixed. A study that include PMM as a moderating factor may therefore go a long way in shading some light on the role played by PMM on project performance.

2.5 Monitoring and Evaluation Processes, Project Management Maturity and Performance of Digital Education Technology Project

The role played by M&E in the performance of a project is fundamental. This is because M&E is associated with an ongoing process by which stakeholders obtain regular feedback on the progress being made towards achieving project goals and objectives (UNDP, 2009). M&E is therefore particularly important in digital educational technology

projects owing to the fact that projects in this area struggle to thrive since teachers find it difficult to integrate digital educational technologies due to lack of time, technical problems, resistance to change and negative attitudes and no perception of benefits among others (Karolcik et al., 2016). Eradication of the problems associated with the integration of technologies in teaching and learning therefore needs regular obtaining of feedback from digital Educational technology projects to inform the formulation of workable strategies**.** In view of the fact that M&E is a project management issue (Richardson, 2015) such that it is anticipated that it will be executed well in an organization that is capable of managing its projects, PMM is critical as it may create an environment where M&E can have an influence on DET project performance.

2.6 Theoretical Framework

A theoretical framework is the application of a set of concepts drawn from the same theory, to shed some light on a particular phenomenon or research problem. It is used for studies based on existing theories where specific concepts and propositions are induced or deduced to give an explanation of interrelated theories to show the relationship between two or more variables. Indeed as stipulated by Wambugu et al (2015) a theoretical framework provides a descriptive explanation of a phenomenon that specifies the variables and the laws governing the relationship between variables. Thus a theoretical framework is the lens through which a phenomenon is looked at in a scientific investigation hence it acts as a back born of a research problem. With regard to this study Theory of Constraints, Social Constructivism Theory, Diffusion Theory, Utilization Focused Evaluation Model and Project Management Maturity Model were used as theories and each of them is described hereunder.

2.6.1 Theory of Constraints

The Theory was proposed by Goldratt in 1997. The theory stipulates that every project has a factor that can limit the attainment of its goals. In this regard the theory sets out the methodology for identifying the most important limiting factor (i.e. constraint) that impedes the achievement of a goal. The constraint is systematically improved such

that it ceases to be a limiting factor. The methodology follows a five step approach which is cyclic in nature and is as presented in Figure 1.

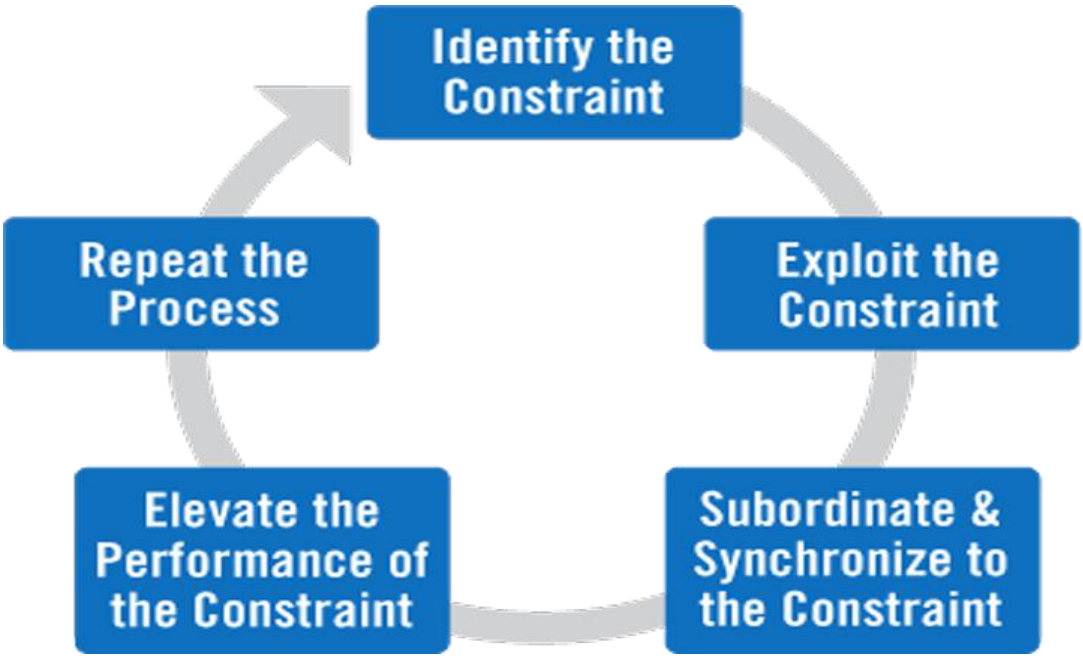

Figure 1: Theory of Constraints

According to Figure 1 the first step deals with the identification of the constraint that limits the attainment of the goal so that mechanisms can be put in place to arrest the situation. The second step is associated with exploiting the constraint which involves making improvements on the constraint using the existing resources. The third step involves subordinating and synchronizing everything to the constraint to ensure an alignment with the needs of the constraints. The fourth stage borders on elevating the performance of the constraint and is associated with putting in more measures to contain the constraint in the event that it persists. The fifth step is concerned with the repetition of the process in the sense that there is need to proceed to another constraint once the constraint at hand is adequately addressed.

The planning component of monitoring and evaluation should keep a critical eye on the constraints that can stifle successful M&E undertaking. In this regard the limiting factors of M&E undertaking should be identified during planning phase. The M&E scope, data collection techniques and data analysis techniques as aspects of M&E planning should be critically examined to bring to the fore those aspects that can have a constraining effect

on M&E undertaking. Mechanisms should therefore be put in place to ensure that these constraints are rectified in order to have a successful M&E which may positively influence the performance of DET project.

2.6.2 Social Constructivist Theory

This is a learning theory that was developed by Vygotsky in 1978 in which he stressed the importance of learning in context which implies constructing understanding through interactions with others in the social environment in which knowledge is applied. It is based on the premise that learning is a socially mediated experience where individuals construct knowledge based on interaction with their social and cultural environment (Hartman, 2012). In this regard this theory calls for learners' active participation in the teaching and learning process. Thus it asserts that learners are not empty slates or tabular rasa such that a teacher can build on learners' prior knowledge in order to facilitate teaching and learning.

The implementation of monitoring and evaluation blue print is a learning ground. The challenges and opportunities experienced during the implementation of monitoring and evaluation should offer lessons so that future M&E endevour can be executed in a better manner (Naccarella, Pirkis, Kohn, Morley, Burgess & Blashki, 2007). For these lessons to be learnt there is need for negotiations among the various actors involved in the M&E implementation as such no actor should be taken as tabular rasa/ empty slate since each has a role to play during the implementation of M&E. Just like any other theory, social constructivism has its own criticism. In this regard Phillips (1995) criticizes constructivism on the basis of epistemological relativism. Thus the theory advocates for subjectivity which may impede consensus in decision making. In the case of implementation of monitoring and evaluation, various stakeholders may come up with their own views regarding M&E implementation which may lead to the provision of conflicting and contradictory viewpoints which may be confusing to synthesize. Nevertheless the theory should be credited for regarding implementation of monitoring and evaluation as a negotiated process. M&E implementation is too complex to be handled unilaterally.

2.6.3 Diffusion Theory

The diffusion theory was proposed by Everette Rogers in 1983. This theory explains how new ideas, information and new viewpoints spread across cultures. The theory stipulates that information or new ideas pass through a path of communication in order to reach a target group. The spread of ideas is influenced by a myriad of factors that include nature of the idea to be spread, the available communication channels, the social system and time of communication of which channel of communication plays a crucial role of all factors (Westen, 2007). The diffusion theory stipulates that it is difficult to influence or change how individuals will behave and adjust their thinking having received new information. Some members will be disoriented with the new information while others will be accommodating. Communication of new information should therefore be done in a manner that it can accommodate all group members (Lewis, 2007).

The diffusion theory therefore ensures feeling of inclusion by all team members. In communicating to team members, there is need to be conscious of the communication channels to be used since some communication channels are more appropriate than others depending upon the nature of information (Kezner, 2003). Ideas that are serious may be taken less serious depending upon the channel of communication. For instance using social media to share M&E results may appear informal and may not be taken seriously.

The relevance of this theory borders on the dissemination of M&E results. Project managers should determine the best way of disseminating M&E results so that results can be considered as a serious business by the stakeholders. Properly disseminated M&E results can be considered positively by the stakeholders which can be a catalyst for utilization of these results for the enhancement of performance of DET project. As emphasized by Carroll (2012) when project information is communicated using appropriate channels project success is assured. Thus with appropriate communication of M&E results, there is a likelihood that the performance of DET technology will be enhanced.

2.6.4 Utilization Focused Evaluation Model

This evaluation model was proposed by Patton (1997) and it stipulates that evaluations should be judged based on their utility and actual use (Alkin, 2013). In this regard the model postulates that evaluation should be undertaken bearing in mind how it will affect use in terms of how real people in real world would apply evaluation findings. Thus the focus of utilization focused evaluation is on the intended users of evaluation as such the evaluation facilitator builds a relationship with these users so that they can determine the kind of evaluation they need (Stufflebeam, 2003). It should be pointed out that utilization focused evaluation does not advocate for any particular evaluation methodology, evaluation approach or a particular kind of use instead it helps intended users of evaluation to select appropriate content, model, methods, theory, and uses for their situation hence utilization focused evaluation is situational. It should be emphasized that intended users are likely to make use of evaluation if they understand and feel ownership of the evaluation hence they have to be actively involved in the evaluation process with the evaluator training the users in use. Active involvement of these users in the evaluation process is therefore critical.

The utility of monitoring and evaluation findings is therefore the whole mark of utilization focused evaluation model as such it calls for use of M&E results to be given due consideration during M&E undertaking. As stipulated by Patton (2008) no matter how robust M&E exercise is, it will remain a useless endevour unless the results are put into use. Thus according to Utilization Focused Evaluation model, use of M&E results is non-negotiable.

2.6.5 Project Management Maturity Model

The ProMMM was inspired by maturity capability model which was developed by Software Engineering Institute in 1980s. The model is a tool used to asses an organization's project management capability. According to Hillson (2003) the model looks at an organization's project management maturity as a function of four elements namely: culture, process, experience and application. Each of these elements of maturity is measured in terms of four levels which are naïve, novice, normalized and natural levels.

At naïve level of PMM an organization is unaware of the value of using projects to deliver benefits. The organization has no structured approach to project management. It is characterized by management processes which are repetitive and reactive. There is little or no attempt to learn from the past to prepare for the future threats or uncertainties. It is anticipated that M&E may not be properly executed in such an environment as it will be marred by management challenges.

In terms of novice level of PMM an organization has begun experimenting with project management but has no formal or structured project management structure in place. The organization is aware of the benefits of project management nevertheless it has not yet put in place formal structures of project management. Just like in Naïve level, M&E may not be properly executed here as there are no proper project management structures to anchor the M&E exercise. Various processes of M&E such as planning, implementation, result dissemination and result utilization need strong project management structures to be carried out properly.

At Normalized level, project management is implemented across all levels of the project as such it is the level at which many organizations aspire. Project management processes are formalized and its benefits are understood at all levels of the organization. In this organization, it is expected that M&E processes would be properly executed because there are proper project management structures which can anchor the processes from Planning, implementation, communication to result utilization.

The natural level is characterized by a fully project based culture with a best practice approach to project management in all aspects of the project. There is an active use of project based information in order to improve the operations of the organization. At this level of PMM, it is expected that M&E will be thoroughly undertaken because of the robust project management structures. M&E will therefore be properly planned, implemented and utilized because of the sound project management structures that have been put in place.

The understanding as per the ProMMM is that the higher the maturity level the higher the performance of DET project. Thus it is believed that M&E will have a greater impact on performance of the project in question if executed in an environment with mature project management. It is expected that in such an environment, M&E will be well planned, implemented and results will be ably utilized.

The model is relevant to this study in the sense that it will provide a framework for measuring PMM of the organization that is implementing the DET project. To this end the project management culture, project management process, project management experience and project management application of this organization are going to be measured based on the levels of PMM. Such being the case each of the four components of PMM will be measured based on naïve, novice, normalized and natural levels of PMM. Determination of maturity level will be crucial in establishing its interaction on the relationship between M&E processes and performance of DET project.

2.7 Conceptual Framework.

The perceived relationship among the independent, moderating and dependent variables is presented in Figure 2.

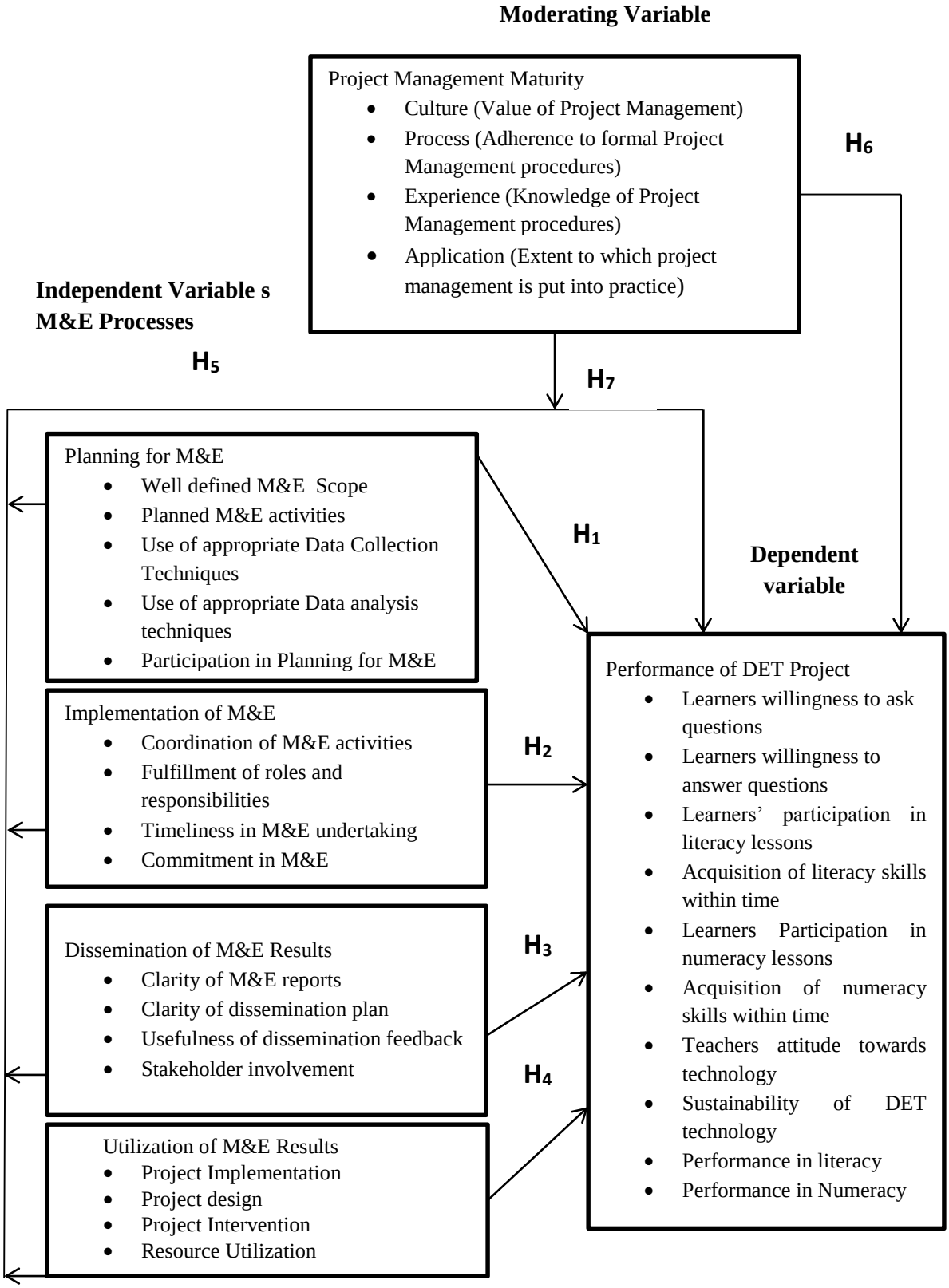

Figure 2: Relationship among M&E processes, PMM and DET Project Performance

According to Figure 2, Monitoring and Evaluation processes was the independent variable and in this regard the aim was to determine how each of the M&E processes (Planning for M&E, Implementation of M&E, Dissemination of M&E results and utilization of M&E results) influenced the performance of the DET project in Malawi which was the dependent variable and operationalized through leaners participation in literacy and numeracy lessons, teachers interest in the technology, sustainability of the intervention, acquisition of literacy and numeracy skills within time and improvement in learners literacy and numeracy performance. The combined influence of the M&E processes on the performance of DET project was also established. Owing to the fact that M&E is a project management issue such that it is bound to be executed better in an organization that is capable of managing its projects, project management maturity was perceived as a moderating factor on the relationship between M&E processes and performance of DET project.

2.8 Knowledge Gaps

From the literature that has been reviewed, there is a strong conviction that M&E processes are critical to the performance of the project and DET project is no exception. However the claim has been mainly based on secondary data/ literature review. Thus there is little empirical evidence to substantiate the fact that M&E is critical to project performance despite the fact that huge investment is put into M&E undertaking financially and politically. Moreover the few studies that have taken an empirical route have not addressed the influence of M&E processes on project performance from the view point of DET project in Malawi. This can be attributed to research design issues as most of these studies have not taken an experimental and /or correlational design perspective. In addition despite the fact that project management maturity is instrumental to project performance, there is no study that has included it as a moderating factor to see how it can interact with the relationship between M&E processes and Performance of DET project in Malawi.

Table 2.2, presents a summary of the knowledge gaps and how this study addressed the same.

Table 2.2

Knowledge Gaps established in Literature

Researcher	**Variables**	**Findings**	**Knowledge gaps**	**Action**
Ogwueleka (2013)	Critical success factors influencing project performance	The critical success factors are objective management, management of design technical factors top management support risk management	M&E has not been considered amongst the factors	The study established the relationship between M&E processes and DET project performance
Chen (2012)	Predictors of project performance	The predictors were : Scope Quality Communication	The study did not include M&E as predictor of performance	The study explored the relationship between M&E and DET project performance
Babu and Sudhakar (2015)	Critical success factors influencing performance of construction industries	The factors were Manager related factors Organizational related factors Project related factors	The study did not make explicit mention of M&E as a factor. Furthermore the study was based on literature review and it focused on construction projects	The study empirically examined M&E in relation to performance of digital educational technology in projects in Malawi

Chaplowe (2008)	Components of M&E planning	The study highlighted the following components Causal analysis framework Log frame Indicators Data collection Data analysis	These components have not been linked to project performance to underscore their importance	The study linked aspects of M&E planning to project performance empirically
Hobson, Mayne and Halmiton (2013)	Procedural guidelines for M&E planning	These include: Data collection Data analysis Monitoring standards Key issues and questions to investigate	These guidelines have not been linked to project performance to demonstrate that they are critical. In addition only qualitative methodology was used hence there was no way of quantifying the relevance of these factors	The study linked these guidelines to project performance empirically. Besides a quantitative approach was used in order to establish the extent to which these guidelines contribute to performance
Red Cross and Red Crescent (2011)	Steps that should be included in the M&E process	These include Scope of M&E Data collection plan Data management and analysis plan	The guidelines were described as important but they were not linked to project performance	The study linked these with project performance in an empirically conducted study on DET project in Malawi.
UNDP (2009)	Components that are instrumental to monitoring planning	The components are Monitoring framework which includes what should be monitored, who is responsible for monitoring activities, timing of monitoring and methods Resources for monitoring Stakeholder engagement Capacity for monitoring	These components were not linked to project performance and were not based on empirical research	These components were linked to project performance in an empirical study in Malawi.

Adamchak, Bond, Maclaren, Magnan and Nelson (2000)	Reasons why M&E results are important	The reasons include Improvement of project intervention Form a basis for lobbying of extra resources Informs project implementation changes	The findings did not emerge from an empirical study and were not linked to project performance	M&E result utilization aspects were linked to project performance based on an empirically designed study
UNDP (2009)	Ways by which M&E results can be used	The various ways are Validation of project logic Brings out project implementation opportunities, challenges and risks	These uses were based on literature review and were not linked to project performance	The study linked M&E result utilization with project performance based on an empirical study
Zhanjun, Waifeng and Jiangbo, (2016)	Purpose of monitoring in higher educational institutions	The purposes include Informs continual improvements and adaptation to systemic changes	The study was based on literature review and did not link the purposes to performance	The study linked monitoring with project performance based on an empirical study
Bourne and Tuffley (2007) as cited in Demir and Kocabs (2010)	Role of Project Management Maturity in the enhancement of project performance	Organizations which improve their PMM gain improved schedule and budget predictability; improved cycled time; increased productivity, improved quality, customer satisfaction, employee morale, increased return on investment and decreased cost of quality	This claim was based on secondary data. There was no empirical data. In addition the study was not specific to DET	The study quantified the contribution of project management maturity empirically to DET project performance
Mir and Pinnington (2014)	Link between project management performance and project success	Project management performance explained 44.9% of the variance in project success	The study was done in United Arab Emirates (UAE) which is a different context from Malawi.	The study focused on a case of Malawi and was specific to DET project

2.9 Summary of Literature

Firstly the chapter has demonstrated that many projects are failing**.** For instance Richardson (2015) contends that most organizations do not experience project success rates of above 50% positing that countless number of case studies in the last 30 years point to the fact that approximately 50% of projects undertaken have been late and / or exceed budget; and approximately 25% are cancelled before completion. Furthermore the Standish Survey group (2011) has submitted that project delays and cost overruns have not improved since 2002. Additionally Dugger (2007) cited in Ika (2012) has reported that despite the World Bank investing over 5 billion US dollars in over 700 projects in Africa over the past 20 years project failure rate is over 50%. In view of the foregoing it can be concluded that project performance is a burning issue thereby begging the need for more empirical studies to develop solutions which may improve the project performance situation. DET projects are not immune from these challenges hence an investigation of the performance of projects of this nature is critical.

Secondly the chapter has shown that planning for M&E has been described as an important venture in the M&E process. However scholarship linking planning for M&E and performance of DET projects is limited. For instance Chaplowe (2008); Robson, Mayne and Halmiton, (2013); Red Cross and Crescent (2011); and UNDP (2009) have all highlighted guidelines and components of planning for M&E but no linkage with performance of DET project has been made to justify these guidelines and components.

Thirdly it has been demonstrated in the review that effective implementation of M&E is critical and studies have been conducted highlighting its relevance. For example the UNDP (2009) has documented guidelines for effective implementation of M&E however the guidelines lack an empirical connection to performance of DET projects in order to provide a strong justification.

The fourth aspect that has emerged from the literature review is that dissemination of monitoring and evaluation results is critical to a project. Badir, Buchel and Tucci (2012); and Brodbeck (2001) have all emphasized that communication which includes sharing of

monitoring and evaluation results has a positive influence on project performance. This entails that dissemination of monitoring and evaluation results is a critical issue and should be accorded priority in a monitoring and evaluation undertaking.

The fifth aspect that has emanated from the review is the fact that M&E result utilization is a critical endevour in a project. There is a corpus of literature demonstrating this assertion. For instance Adamchak, Bond, Maclaren, Magnan and Nelson (2000); and Preskill and Caracelli (1997) cited in Gildemyn (2014) have all highlighted reasons why M&E results are important to a program but are running short of basing their claims on empirical studies linked with performance of DET project. This renders these claims speculative.

The other aspect is that there is a mixed corpus of evidence regarding the relationship between project management maturity and project performance with (Bourne and Tuffley (2007) as cited in Demir and Kocabs (2010); Mir and Pinnington (2014); Backlund, Chroneer and Sundqvisit (2014) converging on the fact that project management maturity increases project performance. This position contradicts studies by Yazic (2009); Pretorius, Steyn and Jordaan (2012); Rodriguez and Evrard (2004) who in their studies have established that there is no significant correlation between project management maturity and project performance. The mixed claims on the relationship between project management maturity and project performance entails that there is need to conduct more research to try to establish a clear relationship between these variables.

In view of the foregoing it is therefore clear that the need for an investigation on the relationship among Monitoring and Evaluation processes, Project Management Maturity and performance of DET project cannot be over emphasized. Such kind of an investigation may contribute to the otherwise missy area which needs more light to clarify various relationships obtaining in this area.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodological framework that guided the study. It provides details on philosophical underpinning that anchored the study, research design, target population, sampling techniques and sample size, research instruments, validity and reliability of instruments. It also provides an account of data collection and data analysis techniques that were used.

3.2 Research Paradigm

The role of paradigm in research is crucial as it sets out the framework of thinking in which the methodology is located. Paradigm for Bryman (2008) refers to a world view or belief system regarding the nature of social reality. Three main paradigms in research are documented and these are positivism, constructivism and pragmatism. The study was guided by pragmatism as a philosophical underpinning; a combination of positivism and constructivism which are the two contrasting epistemological world views. The choice of pragmatism as a research paradigm was premised on the fact that performance of DET project is complex to be understood using one lens. The combination of lenses (positivism and interpretivism) was therefore critical as it provided a holistic understanding of the influence of Monitoring and Evaluation processes on the performance of DET project and the moderating influence of project management maturity on the relationship between the two variables. Positivism assumes that there is an objective social reality out there which can be discovered and that it can be explained in terms of cause and effect (Johnson & Onwuegbuzie, (2004). Positivism was therefore helpful in uncovering the objective reality concerning the influence of monitoring and evaluation on the performance of DET project. This is because the hall mark of positivism is the determination of relationship among variables.

The constructivist philosophical orientation assumes that reality is socially constructed (Cresswell, 2009). To this end reality is not singular. The same phenomenon can be described in different ways leading to different ways of perceiving and understanding yet neither way of describing it is necessarily wrong (Willig, 2008). This theoretical perspective was important as it acted as a guide in the capturing of multiple realities concerning the mechanisms that explain the relationship between Monitoring and Evaluation and performance of DET project. The multiple perspectives of the respondents were handy in explaining the relationship among the variables that was established using the positivist lens.

In operationalizing the pragmatist philosophy, mixed methods approach was used. As stipulated by Teddlie and Tashakkori (2009) mixed methods involve the combination of quantitative and qualitative strategies. The rationale is to understand reality holistically in order to grapple with its complexity (Onwuegbuzie & Leech, 2006). Thus the quantitative aspect was critical in establishing the numerical relationship among M&E processes, Project management maturity and performance of DET project. The qualitative component on the other hand was helpful in obtaining multiple voices of the respondents regarding M&E processes, project management maturity and performance of DET project. Such voices were critical in explaining the numerical relationship that was established using the quantitative approach.

3.3 Research Design

The study employed a descriptive correlational survey design. As stipulated by Mertens and Wilson (2012) this design involves describing the phenomenon as it exists in the population without any form of manipulation of variables. The phenomena that existed in the population as per this study were M&E processes, Project Management Maturity and performance of the DET project. Respondents were therefore asked to provide their opinions about the magnitude of these variables as they existed in the population. Descriptive survey correlational design is also associated with establishing the relationship among variables based on correlational analysis (Wambugu, Kyalo, Mbii & Nyonje, 2015). Accordingly this design enabled the researcher to determine the empirical relationship

among the independent (M&E Processes), moderating (Project Management Maturity) and dependent (performance of DET project) variables hence the design was also correlational in nature. Note should be taken that the survey was cross sectional as the data was collected just at one point in time. It did not involve establishing a trend by way of collecting data multiple times regarding the same variables (Bryman, 2008).

3.4 Target population

The target population of the study was 456 participants comprising Monitoring and Evaluation officials, Project Coordinators, Standard one project implementers and Standard two Project implementers. The M&E team comprised 13 officers based at National and District levels of the project. The project had 119 project coordinators whose responsibility was to coordinate and monitor the implementation of the DET intervention at Zonal and school levels of the project. The DET project was implemented in 53 primary schools and so in total there were 119 coordinators spread in these schools and Zones. The project targeted standard one and two classes as a result there were a total of 163 and 161 project implementers respectively who were responsible for executing the intervention in these classes . The coordinators and implementers were trained in the implementation, monitoring and evaluation of the project at their respective levels. Table 3.1 presents the target population disaggregated by positions in the project.

Table 3.1:

Target Population of the DET project

Position in the Project	Target Population	Percentage
M&E Officials	13	3
Project Coordinators	119	26
Standard 1 Project Implementers	163	36
Standard 2 Project Implementers	161	35
Total	456	100

Source: Project Document

The target population was therefore 456 personnel across all positions. These participants were involved in one way or the other in the implementation, monitoring and evaluation processes of the Digital Education Technology project intervention.

3.5 Sample size

Respondents were drawn from all the categories that had a role in the M&E processes. It should be noted that the size of the sample is critical as it has a bearing on the generalizability of research findings (High, 2000). In this study sample size determination was based on Krejcie and Morgan (1970) as shown in Appendix D. From a target population of 456 a sample of 205 respondents was selected for the study.

3.6 Sampling Procedures

The study used proportionate stratified random sampling technique in order to ensure that all categories of units were represented in the sample. According to Creswell (2009) this sampling technique entails that specific characteristics of the individuals are represented in the sample and that the sample reflects truly the proportion in which these characteristics obtain in the population. Furthermore the use of this technique enhances generalizability of findings for the very fact that all categories of the target population are represented in the sample (Kothari, 2009; Kotrlik & Higgins, 2001). Thus this sampling technique is ideal for heterogonous population of which the target population of this study was a case in point. Accordingly for this study, names of project staff in all categories (M&E Officials, Project Coordinators, Standard one project implementers, Standard two project implementers) were obtained from the program document. For each category all names were listed and assigned numbers. At this juncture a table of random numbers was used to select respondents pertaining to each category. The use of table of random numbers ensured that each of the members of the stratum had an equal chance of being included in the sample (Kerlinger & Lee, 2000). This was important as it made it possible to use inferential statistics in the analysis of data since one of the conditions for this type of analysis to be performed is random sampling of respondents (Kathari & Garg, 2018).

Majority of the sampled respondents had their telephone numbers in the program document and were contacted for their participation in the study. Those whose contacts were missing in the program document, contacted respondents were helpful in providing their details and in the final analysis they were also contacted for their voluntary participation in this research project. Ultimately 205 respondents from all strata were contacted for their participation in the research study. Their distribution according to the stratum they belonged is presented in Table 3.2.

Table 3.2

Distribution of Respondents Based on Category

Position In the Project	**Total Number**	**Sample Size**
M&E officials	13	7
Project Coordinators	119	53
Standard one project implementers	163	73
Standard two project Implementers	161	72
Total	456	205

Table 3.2 is a summary of sampled respondents in relation to the category of belonging. It is clear from the table that the sample is proportionately distributed according to the stratum of belonging.

3.7 Research Instruments

The study utilized a questionnaire and interview guide as research instruments.

3.7.1 Questionnaire

A questionnaire with closed ended items in the form of rating scales was used to collect numerical data on monitoring and evaluation processes, project management maturity and performance of digital educational technology project. This type of questionnaire was used because it enhances objectivity of responses hence amenable to

quantification (Miller & Salkind, 2002). The stakeholders involved in M&E were requested to provide their rating on the four components of the independent variable which are planning for M&E, implementation of M&E, dissemination of M&E results and utilization of M&E results. The rating scales took the form of extent to which each component of M&E was attained in the monitoring and evaluation process thereby generating ordinal level data (Goodwin, 2010). In addition the stakeholders provided ratings on the project management maturity of the organization that implemented the project on four components of maturity namely: culture, process, experience and application. On this particular one a tool that was used by Hilsson (2003) in measuring project management maturity was adapted to this study. Furthermore the respondents provided ratings on the performance of DET project. In particular they were requested to rate the extent to which the project enhanced pupils' performance in literacy and numeracy.

3.7.2 Interview Guide

An interview guide with open ended items was prepared and used qualitative data. Wambugu et al., (2015) describe interview guide as a list of topics that the interviewer intends to investigate during the interview. The rationale behind the guide is to ensure that the same general areas of information are collected each respondent (Kothari, 2009). The interview guide contained topics on M&E processes, project management maturity and performance of DET project. 10 respondents comprising of 5 members of the M&E team and 5 project coordinators were selected to provide information based on these thematic areas. The interview was face to face and it allowed for probing. This enabled the researcher to get a deeper understanding of the issues under investigation (Silverman, 2005). The interview was conducted in a flexible manner as such the respondents were free to express themselves on the topical issues before them. It was anticipated that the 10 respondents that were interviewed could exhaust the issues as per the thematic areas so that theoretical saturation could be achieved. As recommended by Teddlie and Tashakkorri (2009), the sample size of individuals required for qualitative research ranges from 6 to 24. Thus the choice of 10 participants was within the required range. However, key to qualitative sample size is the notion of saturation; a situation where the researcher has captured a wide range of ideas such that no new information is forthcoming (Teddlie &

Tashakkorri, 2009). Thus the number of 10 participants was provisional nevertheless theoretical saturation was reached with these 10 respondents.

In summary all instruments, respondents for each instrument and the data that was collected by each instrument are presented in Table 3.3.

Table 3.3

Instruments, Participants and Type of Data

Instrument	**Participants**	**Data**
Questionnaire	M&E team, Project Coordinators, Standard one project implementers, Standard two project implementers	Magnitude of M&E processes, Project Management Maturity. and Performance of DET project
Interview guide	M&E Team and Project Coordinators	Voices on M&E Processes, project management maturity and Performance of DET project

3.8 Piloting of Instruments

The instruments underwent pilot testing. According to Kelley, Clark, Brown and Sitzia (2003) piloting provides an opportunity for the researcher to determine whether the participants understood the items and also whether or not the meaning of the items was the same for all the participants. Thus it creates an opportunity to fine tune the instruments so that an appropriate data can be collected.

Piloting was therefore done with participants that were not part of the sample but from the same population from which the sample was drawn. The aim was to ensure that the contexts of piloting and the actual study were the same such that piloting reflected the actual study population (Newby, 2010).

During piloting, the researcher took notes on participant's reactions in relation to the structure of the instruments, the period for which participants took to complete the instrument and the clarity of the items.

3.9 Validity of the Instruments

Validity is associated with the extent to which an instrument is measuring what it claims to measure (Punch, 2005). Thus validity is critical as it ensures that research instruments are of high quality and this has a bearing on data quality. Traditionally validity is determined using three approaches and these are: Content validity, Predictive validity and Construct validity (Creswell, 2014).

Content validity is concerned with whether the conceptual definition is adequately represented by the measuring instrument. In this research, the indicators that are linked to the objectives of the study came from literature and were subjected to a review process by the researcher in conjunction with the supervisors. Thus both face validity (researcher's conviction that the instruments are genuine) and sampling validity (Concepts being adequately represented by the indicators) were assured through this process (Nachmias & Nachmias, 1996).

Construct validity is associated with the alignment of the measuring instrument with the theoretical expectations (Punch, 2005). In this study the notions of constructs, concepts and indicators were systematically aligned such that the construct was broken down into concepts while concepts were reduced to indicators for measurement purposes. Thus by measuring the indicators, concepts were measured and by measuring concepts constructs were ultimately measured. The whole process was informed by literature review.

3.10 Reliability of the Instruments

A research instrument is said to be reliable if it produces consistent results (Kothari, 2004). This position is agreed by Darr (2005) when he describes reliability as the extent to which the instrument yields the same results on repeated trials. Of particular concern for reliability is the notion of internal consistency which relates to the concept-indicator aspect of measurement whereby multiple items are used to measure the concept. Thus the main issue is the extent to which these items are consistent with each other.

Since independent, moderating and dependent variables of the study were measured on a multiple scale; Cronbach's Alpha was used to measure the reliability of items

pertaining to the M&E concepts of Planning, Implementation, Dissemination, Utilization, project management maturity and performance of DET project. Indicators pertaining to each of the aforementioned concepts were subjected to reliability test to see to if they were consistent with the concept. To make a decision on reliability of instruments, a reliability coefficient of 0.7 was used as an acceptable benchmark (Gliem & Gliem, 2003). Table 3.4 presents results of the reliability test that was undertaken:

Table 3.4

Reliability Test

Description	Cronbach's Alpha	Number of items in the scale
Performance of DET project	0.846	10
Planning for M&E	0.885	5
Implementation of M&E	0.873	4
Dissemination of M&E results	0.912	4
Utilization of M&E results	0.808	4
Project Management Maturity	0.82	7

As presented in Table 3.4, Cronbach's Alpha ranges from 0.808 to 0.912. This means that the instruments were reliable as Cronbach's Alpha was above the threshold of 0.7.

3.11 Data Analysis Techniques

The study employed a number of data analysis techniques. The qualitative data was analyzed using a thematic approach. In this regard qualitative data was looked at in light of the thematic areas of the research (Burton, 2000). These thematic areas were in line with the research objectives.

As for the quantitative data, various data analysis techniques were used. Descriptive data analysis techniques such as frequencies, mean and standard deviation were used to describe the variables of the study. Thus performance of DET project, planning for

Monitoring and Evaluation, Implementation of Monitoring and Evaluation, Dissemination of Monitoring and Evaluation Results, Utilization of Monitoring and Evaluation Results and Project Management Maturity were subjected to these statistical techniques so as to describe their occurrence in the population (Bierman, Bonini & Hausman, 1991). Pearson Product Moment Correlation Coefficient was used to describe the relationship between each independent variable and the dependent variable. Thus Planning for Monitoring and Evaluation, Implementation of Monitoring and Evaluation, Dissemination of Monitoring and Evaluation Results and Utilization of Monitoring and Evaluation Results were each correlated with performance of DET project using Pearson Product Moment Correlation Coefficient. Combined M&E Processes was also correlated with DET project performance which was the dependent variable. Regression analysis technique was also used to establish the contribution of each predictor to the dependent variable (Giles, 2014). A combination of all the predictors under M&E processes was also regressed with the dependent variable to establish the combined influence. Stepwise regression was used to test for moderating effect of Project Management Maturity on the relationship between M&E processes and Performance of DET project. At this juncture three regression models were built to assess the moderating effect (Zikmund, 2002).

3.12 Test of Hypotheses

The study used regression analysis to determine the contribution of Monitoring and Evaluation Processes and Project Management Maturity to performance of DET project. Coefficient of determination was used to explain the amount of change in dependent variable being explained by the independent variable while F-ratio was used to determine the statistical significance of the model. The hypotheses that were tested in this study are in Table 3.5

Table 3.5

Models for Testing the Hypotheses

Objective	Hypotheses	Model for Hypothesis Testing
To establish the influence of planning for M&E on the performance of the DET project in Malawi	**Hypothesis 1** H0:Planning for Monitoring and Evaluation has no significant influence on performance of DET project in Malawi	$y=a+B_1X_1+e$ where y=Performance of DET project B_1=Beta Coefficient X_1=Planning for M&E e=error term
To establish the influence of Implementation of Monitoring and Evaluation on the performance of DET project in Malawi	**Hypothesis 2** H0:Implementation of Monitoring and Evaluation has no significant influence on performance of DET project in Malawi	$y=a+B_2X_2+e$ where y=Performance of DET project B_2=Beta Coefficient X_2=Implementation of M&E e=error term
To establish the influence of Dissemination of Monitoring and Evaluation Results on the performance of DET project in Malawi.	**Hypothesis 3** H0:Dissemination of Monitoring and Evaluation Results has no significant influence on performance of DET project in Malawi	$y=a+B_3X_3+e$ where y=Performance of DET project B_3=Beta Coefficient X_3=Dissemination of M&E Results e=error term
To establish the influence of Utilization of Monitoring and Evaluation Results on the performance of DET project in Malawi	**Hypothesis 4** H0:Utilization of Monitoring and Evaluation Results has no significant influence on the performance of DET project in Malawi	$y=a+B_4X_4+e$ where y=Performance of DET project B_4=Beta Coefficient X_4=Utilization of M&E Results e=error term
To establish the influence of Combined M&E processes on the performance of DET project in Malawi	**Hypothesis 5** H0:Combined M&E processes has no significant influence on the performance of DET project in Malawi	$y=a+B_5X_5+e$ where y=Performance of DET project B_5=Beta Coefficient X_5=Combined M&E processes e=error term
To establish the influence of project management maturity on the	**Hypothesis 6** H0:Project Management Maturity has no significant influence on the	$y=a+B_6X_6+e$ where y=Performance of DET project B_6=Beta Coefficient

performance of DET project in Malawi	performance of DET project in Malawi	X_6=Project Management Maturity e=error term
To establish the moderating influence of project management maturity on the relationship between Combined M&E processes and performance of DET project in Malawi	**Hypothesis 7** H0:Project Management Maturity has no significant moderating influence on the relationship between Combined M&E processes and performance of DET project in Malawi	$y=a+B_5X_5+B_6X_6+B_7X_5X_6+e$ where y=Performance of DET project B_5….n=Beta Coefficient X_5=Combined M&E processes X_6=Project Management Maturity X_5X_6=Interactive term e=error term

3.13 Ethical Considerations

In conducting this study, the following ethical guidelines were followed. Firstly the principle of confidentiality was adhered to. In this regard, participants were assured that their views would be kept confidential. On this particular one, pseudo names of participants were used to reinforce this principle. Second was the issue of voluntary participation whereby respondents' right to participate in the study was respected. In the event of non-willingness to participate, no participant was forced to participate.

3.14 Operationalization of Variables

Table 3.6 indicates the operational definition of variables which include their respective indicators, measurement, research approach, type of statistical analysis and the tool for analysis.

Table 3.6

Operationalization of Variables

Variables	**Indicators**	**Measuring Scale**	**Type of Statistical Analysis**	**Tool of Analysis**
Performance of DET technology Project	Learners willingness to ask questions Learners willingness to answer questions Learners Participation in literacy lessons Acquisition of literacy skills within time Learners participation in numeracy lessons Acquisition of numeracy skills within time Teachers interest in the use of technology School readiness to continue with the project once it is phased out Leaners performance in literacy Learners performance in numeracy	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Regression Analysis
Planning for Monitoring and Evaluation	M&E Scope Planning of M&E activities Data collection Data analysis Stakeholder participation in planning for M&E	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Regression Analysis

Implementation of Monitoring and Evaluation	Coordination of M&E activities Fulfillment of roles and responsibilities Timeliness Commitment in M&E undertaking	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Regression Analysis
Dissemination of Monitoring and Evaluation Results	Clarity of M&E report Clarity of dissemination plan Usefulness of dissemination feedback Stakeholder involvement	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Regression Analysis
Utilization of Monitoring and Evaluation Results	Magnitude of project implementation Magnitude of project design Quality of project intervention Resource utilization	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Regression Analysis
Project Management Maturity	Culture Process Experience Application	Interval	Parametric	Mean Standard Deviation Pearson Correlational Analysis Stepwise Regression Analysis

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter describes respondents that took part in the study. The chapter also presents a descriptive analysis of the variables which is followed by inferential statistical analysis to test the hypotheses. Interpretation and discussion of the results have also been made in this chapter. The chapter is guided by the research objectives in order to ensure logical flow.

4.2 Questionnaire Return Rate

The study had a sample size of 205 representing individuals that participated in the implementation and monitoring and evaluation processes of the Digital Education Technology (DET) project in Malawi. The questionnaire was the main data collection instrument and 184 participants out of the 205 participants returned the questionnaires representing a return rate of 89.75% which was adequate for this study. As stipulated by Richardson (2005) a response rate of 60% is adequate for social science research. Face to face interviews were conducted and in this respect, 10 respondents (5 M&E officials and 5 project Coordinators) were interviewed representing a return rate of 100%. The aim was to triangulate results that were obtained from 184 questionnaires as completed by M&E officials, Project Coordinators, Standard one project implementers and Standard two project implementers. The distribution of the respondents in relation to the target population and sample size in each stratum is as presented in Table 4.1.

Table 4.1

Target Population, Sample Size and Respondents

	Target Population	Sample Size	Number of Respondents
M&E officials	13	7	6
Project Coordinators	119	53	50
Standard 1 Project Implementers	163	73	65
Standard 2 Project Implementers	161	72	63
Total	456	205	184

4.3 Demographic information of Respondents

This section presents demographic information of the respondents.

4.3.1 Gender Distribution of Respondents

The gender of the respondents was analyzed using frequencies and the results are presented in Table 4.2.

Table 4.2

Gender of the Respondents

Description	Frequency	Percent
Male	61	33.2
Female	123	66.8
Total	184	100

The findings in table show that 66.8% of the respondents were females while 33.2% were males. This indicates that one gender dominates the involvement in the implementation and monitoring and evaluation of the DET project. The results suggests that females are active in the DET project than males hence the need to bridge the gender gap in the project.

4.3.2 Age of Respondents

The age of the respondents was assessed using range and mean as shown in Table 4.3

Table 4.3

Age of Respondents

Description	Minimum	maximum	Mean	Std. Deviation
Age	19	58	35.08	10.39

Results in Table 4.3 indicate that the mean age of the respondents was 35.08 years. Furthermore the minimum age was 19 years while the maximum was 58 years. These findings mean that the respondents were mature enough to provide critical information regarding monitoring and evaluation and project performance issues. The standard deviation of 10.39 means that the respondents were of varying ages. This entails that the DET project was accommodating such that it offered opportunities to all respondents of productive and energetic ages.

4.3.3 Academic Qualifications of Respondents

The respondents were of varied academic standing. The distribution of the respondents as per their academic qualifications is presented in Table 4.4.

Table 4.4

Academic Qualifications of Respondents

Academic Qualification	Frequency	Percent
JC	9	4.9
MSCE	154	83.7
Diploma	16	8.7
Bachelor	4	2.2
PhD	1	0.5
Total	**184**	**100**

Table 4.2 shows that a majority 154 (83.7%) of the respondents were Malawi School Certificate of education (MSCE) holders seconded by Diploma holders 16 (8.7%). Junior Certificate (JC) holders came third with 4.9% whereas Bachelor's Degree holders were at 2.2% while 1 (0.5%) respondent had a PhD. All the respondents received training regarding the Digital Education Technology project and the associated implementation and monitoring and evaluation aspects of the project. This entails that the participants had information about the issues under investigation.

4.3.4 Project Work Experience

Project work experience of the respondents was considered as this is critical in as far as M&E and project performance are concerned. In this regard the respondents had a mean project work experience of 4.5 years which entails that the respondents had enough experience about project affairs hence issues of monitoring and evaluation processes, project management and project performance were not novel to them.

4.4 Tests of Statistical Assumptions and Analysis of Likert Type Data

This section shows how statistical assumptions were met. Multicollinearity, normality and linearity assumptions were tested. The section also includes a description of analysis of likert type data.

4.4.1 Multicollinearity Diognostics

Multicollinearity is a situation whereby the predictors correlate strongly amongst themselves. Regression analysis technique assumes that there is no multicollinearity. This assumption was therefore tested using Variance Inflation factor (VIF). To test for multicollinearity, the values of the items of the indicators for each independent variable were aggregated to get a composite mean. The decision rule used was that if VIF is equal to or greater than 10 then there is a problem with multicollinearity (Field, 2013). According to this study VIFs of all the independent variables ranged from 1.259 to 2.393 which is less than 10. This entails that multicollinearity was not a problem therefore the decision to use regression analysis was justified. The VIF values for independent variables are presented in Appendix E.

4.4.2 Test of Normality

Regression analysis (Ordinary Least Square) being a parametric test assumes that data is coming from a normally distributed population. It is for this reason that a normality test was carried out using Shapiro-Walks. Shapiro-walks gives a W statistic. When W statistic is equal to 1 then the data is perfectly normal (Bonini, Hausman & Bierman, 1997). In this study W statistics for the variables ranged from 0.912 to 0.971. As these values were close to 1, it implies that the data was close to normal as indicated in Table 4.5. At this juncture, the normality statistical property was met. It should be pointed out that perfect normality does not obtain in real life situation.

Table 4.5

Tests of Normality

Description	Shapiro-Wilk Statistic	DF	Sig
Performance of DET project	0.964	184	0.001
Planning for M&E	0.94	184	0.001
Implementation of M&E	0.912	184	0.001
Dissemination of M&E results	0.948	184	0.001
M&E Result Utilization	0.944	184	0.001
Project Management Maturity	0.971	184	0.001

4.4.3 Linearity Test

Regression analysis assumes that there is a linear relationship between the independents and dependent variable (r>0). In this study the linearity of relationship was explored using scatter plots. To this end, performance of DET project was treated as the dependent variable while planning for M&E, Implementation of M&E, Dissemination of M&E results, Utilization of M&E results; Combined M&E processes and Project Management Maturity were independent variables. The tests established that there is a linear relationship between independent and dependent variables thereby justifying the use of regression (See Appendix F).

4.4.4 Analysis of likert type Data

Likert type data was collected for this study. According to Wambugu et al, (2015) likert scale data is in the category of ordinal level of measurement. Data at ordinal level has ranking as a property but it lacks exact distance between two adjacent data points (Field, 2013). In this regard this data is not appropriate for parametric statistical testing. To make it amenable for parametric statistical testing, the likert type data was converted into interval level data by taking the composite mean score of indicators pertain to each variable as advised by Boone and Boone (2012) and Kithinji (2015). With this conversion, it was now possible to perform Pearson Product Moment Correlation Coefficient and Ordinary Least Squares Regression analysis statistical techniques which are parametric in nature.

4.5 Performance of Digital Education Technology Project

The study found it critical to measure the extent to which the Digital Education Technology project performed in Malawi. In order to achieve this 10 indicators were used and measured on a 5 point likert scale. The indicators were as follows: learners willingness to ask questions, learners willingness to answer questions, acquisition of literacy skills within time, learners participation in literacy lessons, acquisition of numeracy skills within time, learners participation in numeracy lessons, teachers' interest in the use of digital education technology, schools' readiness to continue with the project after the project has phased out, improvement of literacy performance and improvement in numeracy performance. The extent to which the DET project performed in relation to the aforementioned indicators is as per Table 4.6.

Table 4.6

Performance of Digital Education Technology Project

Description	**Frequency and percent**					N	**Mean**	**SD**
	NA	LE	ME	GE	VGE			
The Project enhanced learners willingness to Ask questions	19; 10.3%	40; 21.7%	63; 34.2%	35; 19%	26; 14.1%	183	3.04	1.1826
The Project enhanced learners willingness to answer questions	1; 5%	14; 7.6%	38; 20.7%	64; 34.8%	65; 35.3%	182	3.978	0.9631
The project helped learners to acquire literacy skills within time	4; 2.2%	22; 12%	58; 31.5%	65; 35.9%	32; 17.7%	181	3.547	0.99121
The project enhanced learners participation in literacy lessons	2; 1.3%	9; 5.7%	33; 20.9%	49; 31%	65; 41.1%	158	4.0506	0.98264
The project helped learners to acquire numeracy skills within time	4. 2.2%	26; 4.4%	56; 30.9%	59; 32.6%	36. 19.9%	181	3.5359	1.0353
The project enhanced learners participation in numeracy lessons	1;. 6%	10; 5.6%	22; 12.2%	62; 34.3%	85; 47.2%	180	4.222	0.90656
The project promoted teachers interest in the use of technology	5; 2.7%	16; 8.7%	35; 19.1%	43; 23.5%	84; 45.9%	183	4.0109	1.1192
Schools were ready to continue with the project	24; 13.2%	52; 28.6%	30; 16.5%	36; 19.8%	40; 22%	182	3.0879	1.0098
The project improved literacy performance of learners	4; 2.2%	16; 8.7%	33; 17.9%	75;4 0.8%	62; 30.4%	184	3.8859	1.0098
The project improved numeracy performance of learners	3; 1.6%	7; 3.8%	36; 19.7%	75; 41%	62; 33.9%	183	4.0164	0.91673
Composite Mean						184	3.79	0.71

NA=Not At all, LE=Little Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent
n=number of Respondents, SD=Standard Deviation

Table 4.6 shows that generally the DET project was perceived to have moderately performed since the indicators had means ranging from 3.04 to 4.22 measured on a 5-point likert scale. An examination of the frequencies showed that a majority of the respondents (with the highest being 47.2% and lowest being 14.1%) felt that the DET project performed to a very great extent. Learners participation in numeracy lessons was viewed as the main aspect of DET project performance since it had a mean of 4.222 and SD of 0.90656 where 147 respondents rated this aspect of performance as great extent (62;34.3%) or very great extent (85; 45.9) representing 80.2% of the respondents. Learners' participation in literacy lessons was rated second with a mean rating of 4.0506 and SD of .98264. This was followed by participants' conviction that the DET project improved learners' numeracy performance which had a mean of 4.0164 and SD of .91673. Promotion of teachers' interest in the use of technology came fourth with a mean of 4.0109 and SD of 1.1192 while learners' ability to answer questions came fifth with a mean of 3.978 and SD of 0.9631. Participant conviction that the DET project had improved learner's literacy performance was rated sixth with a mean of 3.8859 and SD of 1.0098. Ranked seventh was leaners ability to acquire literacy skills within time which had a mean of 3.547 and SD of 0.9912. This was followed by learners' ability to acquire numeracy skills within time which had a mean rating of 3.5359 and SD of 1.035. School readiness to continue with the DET intervention once the project is phased out came ninth with mean of 3.0879 and SD of 1.0098. Learners' ability to ask questions came last with mean of 3.04 and SD of 1.1826. The composite mean of DET project performance was 3.79 with SD of .71.This implies that the DET project overall was perceived to have performed to a moderate extent.

Interviews that were conducted revealed that the project has done well in terms of arousing leaners interest in numeracy and literacy lessons. Thus learners' participation in these subjects was perceived to have increased as it was reported that the use of tablets is motivating to the learners such that the desire to go into the learning center to have numeracy and literacy lessons sometimes came from learners themselves. One project implementer hinted that "learners are interested in this project. Leaners find the mobile tablets quite enjoyable to the extent that they ask us to open the learning centers so that

they can have lessons. Dropouts are also willing to come and patronize the learning centers."

However learners' willingness to use the tablets did not just come without challenges as at first they were reluctant to use the tablets thinking that they are blood sucking devices. One project coordinator summed it all "it was really difficult for the leaners to start using the tablets. With rumors of blood sucking in this country, learners and parents thought that the tablets are blood sucking devices. Some learners were crying and even urinating themselves upon being given the tablet but now with community sensitization all these misconceptions have gone. "Thus the project enhanced learners' participation in both numeracy and literacy but there were challenges on the part of the learners which in the long run were addressed.

In terms of teachers' interest in the technology, it was reported that the technology is good such that teachers are interested in it however time was a problem for a majority of teachers. One project coordinator reported that teachers are busy with teaching regular classes such that it is difficult for them to find time to use the technology. She added that the project has no special time table in the school such that it is embedded in the normal school time table making it difficult for teachers to attend to this technology.

The issue of sustainability of the project was put to the participants during the interview. It was reported by both M&E officials and project coordinators that it is difficult for the project to continue once the funders have pulled out adding that the tablets are expensive such that the schools cannot afford to repair let alone buy new ones. One M&E official hinted that "this is a very expensive technology. One tablet costs 200, 000 Malawi kwacha (28,500 Kenyan Shillings). Schools are inadequately funded to buy these gadgets".

These findings contradict a study by Karolcik, Cipkova and Kinchin (2016) in which they reported that digital education technology projects are failing because of teachers' lack of confidence in the use of technologies and resistance to change. Furthermore the findings are at variance with a claim made by Khaddage, Muller and

Flintiff (2016) that the adoption of these digital education technologies in the formal classrooms has been not impressive as many teachers in schools and colleges are reluctant to allow their widespread access. The moderate interest of teachers in the DET project implies that headways are being made with respect to the success of digital education technology project. Additionally the overall average performance (Mean=3.79) of the DET project demonstrates that the project is moving in the right direction although more work needs to be done.

4.6 Planning for Monitoring and Evaluation and Performance of Digital Education Technology Project

The first objective of the study was to establish the influence of planning for Monitoring and evaluation on performance of the DET project. In order to achieve this objective the extent to which planning for monitoring and evaluation of the DET project was undertaken in the project was established based on the following indicators: definition of scope of monitoring and evaluation, planning of M&E activities, appropriateness of data collection techniques, appropriateness of data analysis techniques and stakeholder participation in planning for monitoring and evaluation. These indicators were measured on a 5 point likert scale and the results are presented in Table 4.7.

Table 4.7

Planning for Monitoring and Evaluation

Description	Frequency and percent					N	Mean	SD
	NA	LE	ME	GE	VGE			
Scope of M&E was Well defined	7; 3.8%	22; 12%	33; 17.9%	46; 25%	76; 41.3%	184	3.88	1.1859
M&E activities were well planned	5; 2.7%	25; 13.6%	35; 19%	48; 26.1%	71; 38.6%	184	3.842	1.1604
Data collection techniques were appropriate	2; 1.1%	13; 7.1%	30; 16.3%	59; 32.15%	80; 43.5%	184	4.098	0.9869
Data analysis techniques were appropriate	7; 3.8%	17; 9.2%	38; 20.7%	46; 25%	76; 41.3%	184	3.908	1.1534
Planning of M&E was done in a participatory manner	28; 15.2%	27; 14.7%	29; 15.8%	40; 21.7%	60; 32.6%	184	3.419	1.4538
Composite Mean and SD							3.83	1.19

NA=Not At ALL, LE=Little Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent, n=Number of Respondents, SD=Standard Deviation

The findings in Table 4.7 indicate that planning for monitoring and evaluation was perceived to have been done to a moderate extent with mean of indicators ranging from 3.4185 to 4.0978. A look into the frequencies revealed that a majority of the respondents (with the highest being 43.5% and lowest being 32.6%) felt that planning for monitoring and evaluation was done to a very great extent. Appropriateness of data collection techniques was viewed as the main aspect of planning for monitoring and evaluation since it had a mean score of 4.0978 and SD of .09878 where 139 respondents rated this aspect of performance as great extent (59; 32%) or very great extent (80; 43.5%) representing 75.5% of the respondents. This was seconded by appropriateness of data collection techniques which had a mean of 3.9076 and SD of 1.15335. Definition of scope of monitoring and evaluation came third with a mean score of 3.8804 while planning for M&E activities was rated fourth with a mean of 3.8424 and SD of 1.16043. Stakeholder participation in

planning for M&E came last with mean of 3.4538 and SD of 1.4538. The composite mean of Planning for Monitoring and Evaluation was 3.83 with SD of 1.19. This implies that respondents were generally of the view that planning for monitoring and evaluation of the DET project was done to a moderate extent.

Interviews with the M&E officials revealed that planning for M&E is undertaken to the extent that before undertaking M&E a meeting is organized to map out the scope of monitoring and evaluation by outlining the objectives that M&E seeks to address. This is followed by a clear definition of data collection techniques needed to address the objectives with the correspondent data analysis techniques to be employed. As one M&E official highlighted "M&E is a daunting task such that it requires thorough planning before execution otherwise irrelevant data can be collected. During planning for M&E we agree on the scope of M&E by clarifying the Objectives to be met at the end of M&E exercise. We also agree on the data collection instruments and how the data will be analyzed. The whole exercise is done in a participatory manner so that all stakeholders should own the evaluation process."

4.6.1 Relationship between Planning for Monitoring and Evaluation and Performance of Digital Education Technology Project

The relationship between Planning for Monitoring and Evaluation and performance of DET project was determined using Pearson Product Moment Correlation Coefficient. The rationale behind this analysis was to establish the strength and direction of the relationship between Planning for M&E and performance of DET project. According to Kothari and Garg (2018) a correlational coefficient of 1 means perfect positive relationship while a correlation coefficient of -1 means perfect negative relation. Finally a correlational coefficient of 0 means that there is no relationship. The judgment rule of the strength of the relationship was informed by the guidelines stipulated by Field (2013) who suggested that an r value of between 0.10 to 0.29 implies weak correlation while an r value of 0.3 to 4.9 indicates a moderate correlation. Finally an r value of 0.5 to 1 demonstrates a strong relationship.

In determining the statistical significance of the correlation, a p value of 0.05 was used as a benchmark. To this end p-value of equal to or less than 0.05 meant that the correlation was statistically significant while p-value of greater than 0.05 meant that correlation was not statistically significant (Bryman, 2008). The correlational results of Planning for Monitoring and Evaluation and the performance of the digital educational technology project are presented in Table 4.8

Table 4.8

Relationship between Planning for Monitoring and Evaluation and Performance of Digital Education Technology Project

		Performance of DET project
Planning for M&E	Pearson Correlation	.415**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

According to findings in Table 4.8, r=4.15. This means that there is a medium positive correlation between Planning for M&E and performance of DET project. The correlation is also statistically significant since p=0.01<0.05. These results imply that planning for monitoring and evaluation as an M&E processes was perceived to have enhanced the performance of DET project in Malawi.

4.6.2 Test of Hypothesis

In further determining the influence of planning for monitoring and evaluation on performance of the DET project simple linear regression analysis was performed based on the following hypotheses:

H0: Planning for M&E has no influence on the performance of Digital Education Technology Project in Malawi

H1: Planning for M&E has influence on the performance of Digital Education Technology Project in Malawi

In order to test this null hypothesis a composite index of planning for monitoring and evaluation was used as the independent variable while a composite index of performance of DET project was used as the dependent variable. This hypothesis was tested using linear regression model $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=Planning for Monitoring and Evaluation

e=error term

Table 4.9 presents summary results of the regression analysis. (Refer to Appendix G for full Statistical results)

Table 4.9

Planning for Monitoring and Evaluation and the Performance of Digital Education Technology Project

Model Summaries	R	R- Square	Durbin- Watson	Unstandardized Coefficient B	Std.Error
	0.415	0.172	1.567		
(Constant)				2.387	0.215
Planning for M&E				0.337	0.055

F (1,183) =37.852, p=0.001<0.05

a. Dependent variable: Performance of DET project

b. Predictors: Planning for M&E

According to the results in Table 4.9, r=0.415 which means that planning for Monitoring and evaluation has a moderate positive influence on performance of DET project. R-square=0.172 which entails that planning for monitoring and evaluation explains 17.2% variation in performance of DET project which means that 82.8% of variation in performance of DET project is due to other factors outside the model. The beta value of 0.337 means that a unit increase in planning for M&E contributes to 33.7% increase in performance of DET project. Overall the model is statistically significant at P=0.001<0.05. The Durbin-Watson test is 1.567 which is closer to 2 indicating the absence of autocorrelation. At this juncture the model did not violate the assumption of correlation.

The F ratio was statistically significant since F (1,183) =37.852, P=0.001<0.05. This entails that there is a statistically significant influence of planning for monitoring and evaluation on performance of DET technology. In view of these results, the null hypothesis was rejected and the alternative hypothesis accepted. Against this background planning for monitoring and evaluation had a significant influence on performance of DET project in Malawi at 0.05 level of significance.

These findings are in agreement with Kidombo, Gakuu and Keiyoro (2013) who view planning as an important factor that is a prerequisite for success in an organization. Additionally these findings concur with Aladwani (2003) who established that an increase in planning by 1 unit lead to an increase of 0.56units of success of IT projects in Kuwait. With a composite mean of 3.83, planning for monitoring and evaluation was an integral aspect of the organization implementing the DET project. This implies that M&E was properly conceptualized such that meaningful data about the project was collected such that decisions to improve on the project came from an informed position.

The findings are also consistent with program evaluation standards as developed by the Joint Committee on Standards for Educational Evaluation (2011) which interalia call for M&E undertaking to be accurate. At this juncture accuracy in the Monitoring and Evaluation processes could be achieved if there was adequate planning of the M&E exercise. Planning for M&E entails that data collection and analysis techniques are accurately conceptualized so that meaningful information from the M&E processes can be realized to improve the project.

These findings also concur with theory of constraint which is associated with identifying the most important factor that impedes the success of the project (Goldratt, 1997). Through the processes of planning for M&E, an opportunity to identify tricky areas of M&E such as scope, data collection and data analysis may have been presented and corrective actions could have been undertaken. This could have led to the improvement of the M&E processes thereby making a positive contribution to the performance of the DET project. As observed by an M&E official, planning for M&E accorded the M&E team an

opportunity to suggest and critique the M&E methodologies that were used. Challenges in data collection and analysis were thought of in advance and dealt with accordingly. In view of the foregoing the organization needs to invest more in planning for M&E in order to increase the benefits that can be accrued from Monitoring and Evaluation exercise.

4.7 Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Project

As a second objective the study sought to establish the influence of implementation of Monitoring and Evaluation on performance of DET project. In a bid to arrive at this realization the extent to which implementation of Monitoring and Evaluation was achieved in the DET project was determined. This was guided by the following indicators: proper coordination of M&E activities, fulfillment of M&E responsibilities, timeliness in the undertaking of M&E exercise and commitment in the undertaking of M&E exercise. These indicators were measured on a 5 point scale and the results are as presented in Table 4.10.

Table 4.10

Implementation of Monitoring and Evaluation

Description	Frequency and percent					N	mean	SD
	NA	LE	ME	GE	VGE			
M&E activities were well Coordinated	11; 6%	19; 10.3%	39; 21.2%	41; 22.3%	74; 40.2%	184	3.8043	1.23906
M&E responsibilities were Fulfilled	4; 2.2%	22; 12%	31; 16.8%	58; 31.5%	69; 37.5%	184	3.9022	1.10201
There was timeliness in the execution of M&E undertaking	8; 4.4%	19; 10.4%	38; 20.9%	56; 30.8%	61; 33.5%	184	3.7857	1.14825
There was Commitment in the undertaking of M&E	7; 3.8%	14; 7.6%	34; 18.5%	51; 27.7%	78; 42.4%	184	3.9728	1.12319
Composite Mean and SD						184	3.87	1.15

NA=Not At all, LE=Little Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent, n=Number of respondents, SD=Standard Deviation

The findings in Table 4.10 indicate that M&E was perceived to have been implemented to a moderate extent since the mean of indicators ranged from 3.7857 to 3.9728. An investigation into the frequencies revealed that majority of the respondents (the highest being 42.4% and the lowest being 33.5%) felt that implementation of Monitoring and Evaluation was done to a very great extent. Commitment to the undertaking of M&E was viewed as the main aspect of implementation of M&E as it had mean of 3.9728 and SD of 1.12319 where 123 respondents rated this particular aspect as either great extent (51; 27.7%) or very great extent (78; 42.4%) representing 70.1% of the respondents . This was seconded by fulfillment of M&E responsibilities which had mean of 3.9022 and SD of 1.10201. Coordination of M&E activities came third with mean rating of 3.8043 and SD of 1.23906 while timeliness in the execution of M&E undertaking came fourth with mean of 3.7857 and SD OF 1.14825. The composite mean of implementation of M&E for the DET project was 3.87 and SD OF 1.15. This means that implementation of M&E was undertaken to a moderate extent.

An in-depth interview that was conducted with the project coordinators revealed that project staff was committed to M&E of the project. They added that staff from the implementing organization does come to schools to observe lessons and identify challenges that the learning centers are encountering. In the words of one project coordinator at the school level: the organization is passionate with the monitoring of this project as M&E staff come to the schools to see the state of the network, mobile tablets and the learning centers in general. When they observe any problems they devise mechanism to arrest the same". Thus the project coordinators in the schools are of the opinion that M&E staff is committed to the cause and they also fulfill their responsibilities.

It was also revealed that M&E staff does their work in a coordinated manner such that when they arrive in the schools they observe all the protocol. When an M&E official comes, he meets with head teacher first and interviews him on how the project is performing. This is followed by a meeting with implementing teachers who are also interviewed on how the project is performing. Finally he goes into the learning center to observe the learning process. He also looks into the status of the network and the mobile tablet to see if there are any challenges requiring attention. In view of these sentiments, the M&E is implemented in a professional manner.

4.7.1 Relationship between Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Project

In establishing the influence of implementation of M&E and the performance of DET project, Pearson Product Moment Correlation Coefficient was used based on composite means of the explanatory and criterion variables. Results pertaining to this analysis are as presented in Table 4.11.

Table 4.11

Relationship between Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Project

		Performance of DET project
Implementation of M&E	Pearson Correlation	.464**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

According to Table 4.11, there is a moderate positive relationship (r=.464) between implementation of Monitoring and Evaluation and performance of DET project. Furthermore the correlation between the two variables is statistically significant at p=0.01<0.5. This means that implementation of monitoring and evaluation was perceived to contribute to performance of DET project to a moderate extent.

4.7.2 Test of Hypothesis

The influence of implementation of Monitoring and Evaluation on performance of DET project was further determined using simple linear regression and the following hypothesis was tested.

H0: Implementation of M&E has no influence on the Performance of Digital Education Technology in Malawi

H1: Implementation of M&E has influence on the Performance of Digital Education Technology in Malawi

In order to test this hypothesis composite index of implementation of monitoring and evaluation was used as the independent variable while a composite index of performance of DET project was used as the dependent variable. The linear model that was tested was $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=Implementation of Monitoring and Evaluation

e=error term

The summary results of the regression analysis are as presented in Table 4.12. (Refer to Appendix H for detailed statistical results).

Table 4.12

Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Project

Model Summaries	**R**	**R-Square**	**Durbin-Watson**	**Unstandardized Coefficient**	
				B	**Std.Error**
	0.464	0.216	1.791		
(Constant)				2.361	0.192
Implementation of M&E				0.342	0.048
F(1,183)=50.029, p=0.001<0.05					
a.Dependent variable: Performance of DET project					
b.Predictors:Implementation of M&E					

Results in Table 4.12 show that R=0.464 which means that implementation of Monitoring and evaluation has a moderate influence on performance of DET project; R-square=0.216 which suggests that 21.6% of variation in performance of DET project is explained by implementation of monitoring and evaluation which means that 78.4% of variation is explained by other factors that are not in the model. A beta value of 0.342 means that a unit increase of implementation of M&E contributes to 34.2% increase in performance of DET project. Overall the model is statistically significant at P=0.001<0.05. The Durbin-Watson test is 1.791 which is closer to 2 hence there is no autocorrelation. The F ratio was significant in view of the fact that F (1, 183) =50.029, P=0.001<0.05. This indicates that there was a statistically significant influence of Implementation of monitoring and evaluation on the performance of DET project. From these findings the null hypothesis was rejected while the alternative hypothesis accepted. In view of this Implementation of monitoring and evaluation has a statistically significant influence on performance of DET project in Malawi at 0.05 level of significance.

These findings are in agreement with Chikati (2009) who emphasizes that for M&E to have a meaningful influence on performance project personnel should fulfill their

responsibilities. The moderate influence of implementation of M&E on performance of DET project can therefore in part be attributed to fulfillment of M&E responsibilities which was executed to a moderate extent (Mean=3.0922). This assertion was also echoed during an interview with a project coordinator when he highlighted that "individuals charged with responsibilities to monitor this project are hard working. They usually find themselves in the school to monitor how the learning centers are working and if there is a problem they are quick to act". In view of this finding, there is need to encourage M&E staff to execute their M&E roles to the maximum so that project performance can be enhanced.

The positive influence of implementation of M&E is also echoed by Australian Government (2016) which calls for implementation of M&E to be done in a coordinated manner. In this study it was found out that coordination of M&E activities was done to a moderate extent (3.8043). This implies that implementation of M&E positively influenced performance of DET project partly because of the coordination of M&E activities during implementation. Coordination of M&E activities is therefore an aspect that should be strengthened as it accrues some benefits to performance of DET project.

The moderate positive influence of implementation of monitoring and evaluation on performance of DET project is in line with the theory of social constructivism as advanced by Vygotsky (1978).The theory advocates for the social construction of knowledge as this is a major way of expediting learning. Through the implementation of M&E actors were sharing knowledge regarding how the project is working and what needs to be done so as to improve performance of DET project. It was this negotiated process of how the project is working that could have contributed to performance of DET project. In this regard more effort needs to be dedicated towards implementation of M&E so that it can be done to a great extent. An improvement in the execution of implementation of M&E can boost performance of DET project.

The positive influence implementation of M&E has on performance of DET project is also in line with assertions made by (Kyalo et al., 2015). In their publication entitled theory of Monitoring and evaluation they content that proper implementation of M&E is

among the pre-requisites of enhanced project performance. Therefore the fact that implementation of M&E was done to a moderate extent entails that there was an effort towards proper implementation of M&E which eventually benefited performance of DET project.

M&E as a discipline has its own standards that have to be followed to ensure quality M&E which can improve performance of a project. It is in this connection that the Joint Committee on Standards for Educational Evaluation (2011) laid down some standards for M&E and one of them is accuracy which encompasses proper implementation as an aspect to it. The positive influence of implementation of M&E therefore reaffirms the need to adhere to evaluation standards. Thus the DET project attempted to follow evaluation standards and as a result of this, positive gains with respect to enhanced performance were registered. It is therefore critical that adherence to evaluation standards be encouraged.

4.8 Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

Dissemination of Monitoring and Evaluation results is a crucial aspect of M&E process. It is for this reason that as a third objective the study sought to determine the influence of Dissemination of Monitoring and Evaluation Results on the performance of the DET project. In a move to achieve this, the study established the extent to which dissemination of M&E results was executed. In this vein clarity of M&E reports, clarity of plan for dissemination of M&E results, improvement of M&E results due to dissemination feedback and stakeholder involvement in the dissemination of M&E results were used as indicators of dissemination of M&E results with measurement of the same done on a 5point scale. Table 4.13 presents a summary of results pertaining to the extent to which dissemination of M&E results was realized in the DET project.

Table 4.13

Dissemination of Monitoring and Evaluation Results

Description	Frequency and percent					N	mean	SD
	NA	LE	ME	GE	VGE			
M&E reports were clear	12; 6.5%	25; 13.6%	31; 16.8%	48; 26.1%	68; 37%	184	3.7337	1.2674
Plan for dissemination of M&E results was clear	16; 8.7%	25; 13.6%	38; 20.7%	47; 25.5%	58; 31.5%	184	3.5761	1.295
Dissemination feedback improved M&E results	10; 5.4%	26; 14.1%	42; 22.8%	52; 28.3%	54; 29.3%	184	3.6196	1.1996
Stakeholders were involved in dissemination of M&E results	28; 15.2%	27; 14.7%	43; 23.4%	43; 23.4%	43; 23.4%	184	3.25	1.268
Composite Mean and SD						184	3.54	1.26

NA=Not At all, LE=Little Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent, n=number of respondents, SD=Standard Deviation

As indicated in Table 4.13 generally respondents felt that dissemination of M&E results was done to a moderate extent with means ranging from 3.25 to 3.7337. When an examination of the frequencies was undertaken, it was revealed that majority of the respondents (the highest being 37% and the lowest being 23.4%) were of the view that dissemination of M&E results was done to a very great extent). Clarity of M&E reports was perceived as the main aspect of dissemination of M&E results as it had mean of 3.7337 and SD of 1.2674 where 116 respondents rated this particular aspect as great extent (48;26.1%) or very great extent 68; 37%) representing 63.1% of the respondents. This was followed by improvement of M&E results due to dissemination feedback with mean of 3.6196 and SD of 1.1996. Clarity of Plan for dissemination of M&E results came third with mean of 3.5761 and SD of 1.295. Stakeholder involvement in the dissemination of M&E results was ranked fourth with mean of 3.25 and SD of 1.268.

The composite mean for Dissemination of M&E results for the DET project was 3.54 and SD of 1.26. This implies that generally respondents were of the view that dissemination of M&E results for the project was done to a moderate extent.

An interview that was conducted with project stakeholders indicated that the project has mechanisms of capturing how the project is performing in real time and the information is timely disseminated to concerned stakeholders at school, zonal, district, national and international levels using the Digital Technology mounted in the schools. One project coordinator at school level reported that "the information on what is happening in the learning center is captured on the satellite in real time. Thus the satellite is capable of capturing the number of hours that learners spent in the center, number of learners that patronized the learning center and learners' performance on literacy and numeracy exercises. A report concerning these is sent to all stakeholders with the ranking of the schools at zonal, district and national levels".

In view of the foregoing sentiments, it is clear that M&E reports are prepared and disseminated to stakeholders. Stakeholders are able to add their input to M&E reports thereby improving the quality of the reports. Thus there is also stakeholder participation in the dissemination of M&E information as coordinators at school level are also able to share the information to project implementers in the schools.

4.8.1 Relationship between Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

The relationship between Dissemination of M&E results and the performance of DET project was established using Pearson Product Moment Correlation Coefficient. The strength, direction and the significance of this relationship are presented in Table 4.14.

Table 4.14

Relationship between Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

		Performance of DET project
Dissemination of M&E Results	Pearson Correlation	.367**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

Results in Table 4.14, show that there is a moderate positive relationship (r=.367) between dissemination of Monitoring and Evaluation results and performance of DET project. In addition the correlation between the two variables is statistically significant at p=0.01<0.5. The findings mean that dissemination of monitoring and evaluation was perceived to have a moderate contribution on the performance of DET.

4.8.2 Test of Hypothesis

Further determination of the influence of dissemination of M&E results on performance of DET project was explored using simple linear regression analysis. Thus the null hypothesis tested was as follows:

H0: Dissemination of M&E Results has no influence on the Performance of Digital Education Technology in Malawi

H1: Dissemination of M&E Results has influence on the Performance of Digital Education Technology in Malawi

In order to test this hypothesis a composite mean score of clarity of monitoring and evaluation reports, clarity of plan for dissemination of M&E results, improvement of M&E results due to dissemination feedback and stakeholder involvement in the dissemination of M&E findings was obtained and used as the independent variable. The dependent variable was a composite mean of indicators that constituted performance of DET project. The linear regression model that was tested was $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=Dissemination of Monitoring and Evaluation Results

e=error term

Table 4.15 shows a summary of the results for the regression model. (Full statistical results are in Appendix I).

Table 4.15

Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

Model Summaries	**R**	**R-Square**	**Durbin-Watson**	**Unstandardized Coefficient**	
				B	**Std.Error**
	0.367	0.135	1.559		
(Constant)				2.78	0.176
Dissemination of M&E results				0.253	0.048
F(1,183)=28.309, p=0.001<0.05					
a.Dependent variable: Performance of DET project					
b.Predictors: Dissemination of M&E Results					

Results in Table 4.15 show that R=0.367 which means that the dissemination of Monitoring and Evaluation results had a moderate influence on performance of the DET project. The coefficient of determination was (R^2=.135) which implies that 13.5% change in performance of the DET project can be explained by dissemination of Monitoring and Evaluation Results. At this juncture, 86.5% of change in performance of the DET project was due to other factors that are outside the model. A beta value of 0.253 means that a unit increase of dissemination of M&E results contributed to 25.3% increase in performance of DET project. Generally the model was statistically significant at P=0.001<0.05. The Durbin-Watson test was 1.559 which is closer to 2 hence there was no autocorrelation. The F ratio was found to be significant since F (183) =28.309), P=0.001<0.05. This entails that there is a statistically significant influence of dissemination of M&E results on performance of DET project. In this regard the null hypothesis was rejected while the alternative hypothesis accepted. Therefore dissemination of monitoring and evaluation results had a significant influence on performance of DET project in Malawi at 0.05 level of significance.

These findings are in resonance with Brodbeck (2001) who established that project communication predicts 14% performance of 29 software development projects in Germany and Switzerland. It is evident from the results in Table 4.15 that dissemination of M&E results predicted 13.5% performance of the DET project which entails that the

relationship between dissemination and project performance cuts across different contexts i.e. developed world (Germany and Switzerland) and developing world (Malawi). The positive influence of dissemination of M&E results on performance of DET project was corroborated during interview with an M&E official when he stated that "Reports on how schools are performing in this project are sent to project stakeholders at zonal, district, national and International levels using digital technology. These stakeholders are therefore able to share ideas regarding how the project is working and ways of improving the performance of the DET project". It was further reported that these M&E reports are clear such that stakeholders are able to make sense of them. The mean rating of clarity of M&E reports was found to be 3.7337 which was moderate. The positive influence of dissemination of M&E results can therefore partly be attributed to the fact that M&E reports were clear. More effort should therefore be made to ensure that M&E reports are clear to a great extent so that more benefits to project performance can be realized.

These results compliment a study by Badir, Buchel and Tucci (2012) entitled "A conceptual framework of the impact of project Team and leader empowerment on communication and performance" in which a qualitative case study methodology involving three Switzerland based companies was used. It was thus concluded that communication amongst the project partners moderates the influence of team and leadership empowerment on project performance. Thus it was claimed that the influence of team and leadership empowerment on project performance is dependent on the level of communication of project information between the project partners. This study has established the influence of dissemination of M&E results on performance of DET project using a quantitative approach in which 13.5% change in performance of DET project is attributed to dissemination of M&E results. With this finding therefore this study has validated assertions by Badir, Buchel and Tucci that communication of project information improves project performance**.**

The importance of communicating M&E results to stakeholders has been emphasized by Hobson, Mayne and Hamilton (2013) to the point that they have proposed a framework of communicating M&E results in Britain. Thus the positive influence of

dissemination of M&E results on performance of DET project as established in this study has reaffirmed the position held by Hobson et al**.** More investment in dissemination of M&E should therefore be encouraged. The fact that dissemination of M&E results was moderately rated (mean=3.5448) entails that more work needs to be done to ensure that dissemination is executed to a great extent.

Dissemination of M&E results provides an opportunity for improving M&E results as stakeholders give feedback which is a basis for corrective action for the M&E report (Richardson, 2015). In this study this particular aspect of M&E had a mean rating of 3.6196 implying that the role of dissemination of M&E results in the improvement of M&E findings was moderately achieved. The positive influence of dissemination of M&E results on performance of DET project can therefore be attributed to the fact that M&E results were improved as a result of dissemination of the same which in turn positively improved the DET project. A call for improvement in dissemination of M&E results may therefore be justified.

The findings validate the diffusion theory as propounded by Rogers (1983). Through diffusion new ideas and viewpoints spread across cultures. Thus dissemination of M&E results ensures that information about the project is spread to various stakeholders. In this regard there is diffusion of project information which triggers project stakeholders to generate new ideas which may work to the betterment of the project. The positive influence of dissemination of M&E results on DET project performance can therefore be due to diffusion of information as dissemination could have provided a platform for various actors to learn how the project was working. In a way new constructive ideas were being proposed which could have worked to the advantage of the DET project.

4.9 Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

Utilization of M&E results is an important aspect of the M&E process as without utilization of results, M&E exercise would be a futile exercise. It is therefore against this background that as the fourth objective, the study determined the extent to which utilization

of M&E results influenced the DET project. In order to arrive at this realization use of M&E results to improve implementation of project activities, use of M&E results to improve project design, use of M&E results to improve quality of project interventions and use of M&E results to improve use of project resources were used as indicators. These indicators were then measured on a 5 point scale and the results are presented in Table 4.16.

Table 4.16

Utilization of Monitoring and Evaluation Results

Description	Frequencies and Percentage					N	mean	SD
	NA	LE	ME	GE	VGE			
M&E results were used to improve implementation of project Activities	5; 2.7%	7; 3.8%	27; 14.7%	54; 29.3%	91; 49.5%	184	4.1902	1.0036
M&E results were used to improve the project design	10; 5.4%	25; 13.6%	44; 23.9%	63; 34.2%	42; 22.8%	184	3.5543	1.1439
M&E results improved the quality of project Interventions	4; 2.2%	16; 8.7%	38; 20.7%	62; 33.7%	64; 34.8%	184	3.9022	1.046
M&E results improved use of financial and material resources	8; 4.3%	15; 8.2%	31; 16.8%	57; 31%	73; 39.7%	184	3.934	1.1337
Composite Mean and SD						184	3.9	1.08

NA=Not At all, LE=Little Extent, ME=Moderate Extent, GE=Great Extent, VGE=Very Great Extent, n=Number of respondents, SD=Standard Deviation

As presented in Table 4.16 generally respondents were of the perception that M&E results were utilized to a moderate extent with means ranging from 3.5543 to 4.1902.

A critical examination of the frequencies shows that majority of the respondents (with the highest being 49.5% and lowest being 22.8%) felt that M&E results were used to a very great extent. Use of M&E results to improve the implementation of project activities was perceived as the main use of M&E results with mean of 4.1902 and SD of 1.0036 where 145 respondents rated this specific aspect of M&E results utilization as great extent (54; 29.3%) or very great extent (91; 49.5%) thereby representing 78.8% of the respondents. This was seconded by use of M&E results to improve use of project resources which had a mean of 3.934 and SD of 1.1337. Use of M&E results to improve quality of project interventions came third with mean of 3.9022 and SD of 1.046. This was followed by use of M&E results to improve project design which had mean of 3.5543 and SD of 1.1439.

The composite mean of Utilization of Monitoring and Evaluation results of the DET project was 3.9 while SD was 1.08. These results mean that respondents were of the view that M&E results for the project were used to a moderate extent.

Interviews that were conducted with the project staff seem to resonate with the picture presented in Table 4.16 as participants were generally in agreement that M&E results are utilized. It was reported by a project coordinator at school level that M&E results have led to the improvement of the project in general. He indicated that as a result of utilizing M&E results, the design of the learning centers has changed to allow for more ventilation so that the Tablets can last longer. The pronunciation of some words by a teacher in the tablet has also changed in order to suit the local context. For instance the pronunciation of the word like nyenyezi (star) was like nye-e-nyezi in the tablet yet the standard pronunciation in Chichewa language which is the national language of Malawi is Nyenyezi. That's M&E results were used to improve the design of the project.

It was also reported that M&E results have been used to improve the use of material resources in the project. For instance the headsets used to listen to the lessons in the tablet were being chewed by the learners thereby reducing their lifespan. With M&E visits into the schools to see how the project is working the problem was noted and the positioning of the headset was changed such that learners do not get a chance to chew them.

These findings therefore contradict claims by evaluation theorists that utilization of M&E results is a problem in many projects. For instance, Bhikoo and Low-Potgieter (2013) as cited in Clo ete et.al (2014) observe that a lot of time is invested in designing evaluations so as to yield credible results but the results are not always used by project stakeholders for programme improvement. Furthermore Brandon and Singh (2009) as cited in Mertens and Wilson (2012) reported that they did not find evidence of utilization of M&E results after reviewing evaluation studies that focused on utilization. Evidence presented in this study however suggests that M&E results are used for project improvement. This is in line with the study conducted by Kithinji (2015) which found out that M&E results are utilized to a moderately high extent amongst non-governmental organizations in Meru county of Kenya. It can therefore be claimed that financial resources that were used to bankroll the M&E exercise of the DET project did not go down the drain.

4.9.1 Relationship between Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

The relationship between Utilization of M&E and the performance of DET project was established using a technique called Pearson Product Moment Correlation Coefficient. In this vein composite means of the explanatory and criterion variables were used to establish the relationship and the findings are as presented in Table 4.17

Table 4.17

Relationship between Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

		Performance of DET project
Utilization of M&E Results	Pearson Correlation	.489**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

According to the findings in Table 4.17, there is a moderate positive relationship (r=.489) between Utilization of Monitoring and Evaluation Results and performance of DET project. Additionally the correlation between the two variables is statistically significant at p=0.01<0.5. These results mean that Utilization of monitoring and evaluation Results was perceived to have a moderate contribution to the performance of DET.

4.9.2 Test of Hypothesis

In order to further determine the influence of utilization of M&E results on performance of DET project a regression analysis technique was used to test the following hypotheses:

H0: Utilization of M&E Results has no influence on the Performance of Digital Education Technology in Malawi

H1: Utilization of M&E Results has influence on the Performance of Digital Education Technology in Malawi

In testing the hypothesis composite mean score of indicators of Utilization of Monitoring and Evaluation results was used as the independent variable. The composite mean of

performance of DET project was at this juncture used as the dependent variable. The linear regression that was tested was $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=Utilization of Monitoring and Evaluation

e=error term

The results of the regression analysis are presented in Table 4.18. (Please refer to Appendix J for full statistical results)

Table 4.18

Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

Model Summaries	**R**	**R-Square**	**Durbin-Watson**	**Unstandardized Coefficient**	
				B	**Std.Error**
	0.489	0.239	1.688		
(Constant)				1.944	0.234
Utilization of M&E results				0.445	0.059
F(1,183)=57.266, p=0.001<0.05					
a.Dependent variable: Performance of DET project					
b.Predictors:Utilization of M&E Results					

Results presented in Table 4.18 show that R=0.489. This means that Utilization of Monitoring and Evaluation results had a moderate influence on performance of the DET project in Malawi. The coefficient of determination (R^2) was 0.239 which implies that 23.9% variation in performance of the DET project can be explained by utilization of Monitoring and Evaluation Results. In this particular regard 76.1% of change in performance of the DET project was due to other factors outside the model. A beta value of 0.445 means that a unit increase of utilization of M&E results contributes to 44.5%

increase in performance of DET project. The model is statistically significant at P=0.001<0.05. The Durbin-Watson test was 1.688 which is closer to 2 hence there was no autocorrelation. The F ratio was significant based on the fact that F (1, 183) =57.266, P=0.001<0.05. This implies that the influence of utilization of M&E results on performance of DET project is statistically significant. At this juncture the null hypothesis was rejected and the alternative hypothesis accepted. It can therefore be concluded that utilization of M&E results has a significant influence on performance of DET project in selected public primary schools in Malawi at 0.05 level of significance.

These findings are in line with Preskill and Caracelli (1997) cited in Gildemyn (2014) who argue that M&E results are used for program improvement and to provide information for decision making. Thus this study has provided an empirical dimension to significance of utilizing M&E results with particular focus on DET project. As presented in Table 4.23 utilization of M&E results explains 23.9% change in performance of the DET project. Furthermore a unit increase of M&E result utilization contributes 44.5% increase in performance of DET project. This is a manifestation of the fact that utilization of M&E results is a critical process of M&E.

The results also validate the argument advanced by Adamchak, Bond, Maclaren, Magnan and Nelson (2000) who contend that M&E results help to improve project interventions as they put the project staff in a learning mode since they understand how and why the program is working. Improvement of project intervention was captured in this study as an indicator and it was established that M&E results were used for this purpose to a moderate extent (mean=3.9022). The positive influence of utilization of M&E results can therefore be partly attributed to the fact that project interventions were improved as a result of using M&E results which in turn boosted performance of DET project. This contradicts observation by Bhikoo and Louw-Potgieter (2013) as cited in Cloete et.al (2014) who argue that evaluators usually spend much time in designing and implementing an evaluation that yields credible results but the findings are not used by stakeholders for programme improvement.

Though not in education Green, Zelbst, Bhadauria and Meacham (2011) established that environmental monitoring has a positive impact on organizational performance. Connectedly the World Bank argues that the value of monitoring and evaluation does not come simply from conducting monitoring and evaluation or having such information available but from using the information to help improve government performance (Mackay, 2007 cited in Barca & Carraro, 2013). Such positions have been echoed in this study as it has been empirically established that utilization of M&E results positively influences performance of DET project.

The Joint Committee on Standards for Educational Evaluation (2011) stipulates that as one of the standards to be adhered to in Evaluation process, utility of evaluation has to be taken into consideration. Utility in this regard entails use of evaluation results for program performance. This study has therefore validated this standard empirically. With moderate execution of M&E result utilization (mean=3.8951) performance of the DET project has improved. Project staff is therefore encouraged to use M&E results in order to expedite project performance.

Michael Patton in his Utilization Focused Evaluation Model stipulates that evaluations should be judged based on their utility (Alkin, 2013). On the same note Patton argues that no matter how methodologically robust an evaluation is, if M&E results are not used it is a bad evaluation. This study is therefore in line with these assertions. The study has established that M&E results were utilized in the DET project and the positive influence that this utilization brought into the DET project has also been established. Thus this study has validated Patton's model of evaluation called Utilization Focused Evaluation.

4.10 Combined Monitoring and Evaluation Processes and Performance of Digital Education Technology Project

The fifth objective of the study was to determine the combined influence of Monitoring and Evaluation processes on the performance of the DET project in Malawi. To address this objective a combination of M&E processes was computed and presented in Table 4.19.

Table 4.19

Combined Monitoring and Evaluation Processes

Description	**N**	Mean	Std.deviation
Planning for Monitoring and Evaluation	184	3.8293	1.188
Implementation of Monitoring and Evaluation	184	3.8662	1.1531
Dissemination of Monitoring and Evaluation Results	184	3.5448	1.2575
Utilization of Monitoring and Evaluation Results	184	3.8951	1.0818
Composite Mean and Std Deviation	184	3.78	1.17

According to results presented in Table 4.19 utilization of M&E results was perceived as the main aspect of M&E process since it had a mean of 3.8951 and SD OF 1.0818. This was seconded by Implementation of Monitoring and Evaluation which had a mean score of 3.86662 and SD of 1.1531. Planning for Monitoring and Evaluation came third with mean of 3.8293 and SD of 1.188 while dissemination of M&E results came last with mean of 3.5448 and SD of 1.2575.

The combined extent was established by calculating the composite mean of the M&E processes. At this juncture it is evident from Table 4.16 that M&E processes had a combined mean of 3.78 and SD OF 1.17. This indicates that overall M&E processes for the DET project were executed to a moderate extent. Measured on a 5-point scale, this is average execution of M&E process which entails that there is need for more effort so that there is an improvement in the execution of the M&E process. The moderate execution of the M&E process echoes Kyalo et.al (2015) who emphasize that monitoring and evaluation should encompass planning, dissemination and result utilization in order to improve project performance. The results are also in line with De Kool and Van Buuren (2004) who advocate for a systematic execution of M&E in order to offer credible lessons that can be used for programme enhancement. Furthermore a call by Khander, Koolwal and Samad

(2010) regarding the systematic nature of monitoring and evaluation is consistent with the findings of this study. Thus moderate execution of the M&E process is a signal of commitment to systematic approach of the M&E process though there is still room for improvement regarding the extent to which these processes are supposed to be undertaken by the project staff.

4.10.1 Relationship between Combined Monitoring and Evaluation Processes and Performance of Digital Education Technology Project

The influence of combined M&E processes on performance of DET project was also determined. Pearson Product Moment Correlation Coefficient was used in this regard. Table 4.20 shows the relationship between combined M&E processes and Performance of DET project.

Table 4.20

Relationship between Combined Monitoring and Evaluation Processes and Performance of Digital Education Technology Project

		Performance of DET project
Combined M&E Processes	Pearson Correlation	.506**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

According to the findings in Table 4.20, r=0.506 which entails that there is a strong positive correlation between combined monitoring and evaluation processes and performance of DET project. Furthermore the correlation between the two variables is statistically significant at P=0.01<0.05. These findings therefore suggest that a combination of M&E processes has greater influence on performance of DET project than each of the processes independently. This implies that the monitoring and evaluation process should be executed in totality if a project is to benefit significantly. Thus planning for M&E, Implementation of M&E, Dissemination of M&E results and Utilization of M&E results should all be effected in a project to maximize the benefits of M&E to a project.

4.10.2 Test of Hypothesis

Further analysis regarding the influence of combined M&E processes on performance of DET project was done using a simple linear regression analysis technique. A new variable comprising mean of means of planning for M&E, Implementation of M&E, Dissemination of M&E results and Utilization of M&E results was created and used as an independent variable while a composite mean of performance of DET project was used as the dependent variable to test the following hypotheses:

H0: Combined M&E processes have no influence on the Performance of Digital Education Technology project in Malawi

H1: Combined M&E processes have influence on the Performance of Digital Education Technology project in Malawi

The linear regression model that was tested is thus $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=M&E processes

e=error term

Table 4.21 presents the results of the regression analysis. (Detailed statistical results are in Appendix K)

Table 4.21

Combined Monitoring and Evaluation Processes and Performance of Digital Education Technology Project

Model Summaries	**R**	**R-Square**	**Durbin-Watson**	**Unstandardized Coefficient B**	**Std.Error**
	0.506	0.256	1.683		
(Constant)				1.931	0.226
Combined M&E processes				0.464	0.059
F(1,183)=62.511, p=0.001<0.05					
a.Dependent variable: Performance of DET project					
b.Predictors: Combined M&E processes					

Table 4.21 shows that R=0.506 which implies that a combination of M&E processes has a strong influence on performance of DET project. The coefficient of determination (R^2=0.256) means that 25.6% change in performance of DET project is explained by M&E processes while 74.4% variation is due to other factors not contained in the model. A beta value of 0.464 indicates that if M&E processes increase by one unit, performance of DET project increases by 46.4%. The model is statistically significant at p=0.001<0.05. Durbin-Watson statistic=1.683 which is very close to 2 and this means that there was no autocorrelation. The F ratio was significant since F (1,183) =62.511, P=0.001<0.05. In this particular respect there is a statistically significant influence of combined M&E processes on performance of DET project. Based on these findings, the null hypothesis is rejected and the alternative accepted. Therefore combined M&E processes has a significant influence on performance of DET project in in Malawi at 0.05 significance level and the magnitude of the influence is bigger than each of the M&E processes independently.

These findings are consistent with UNDP (2009) which underscores that the primary objective of M&E is to enhance project results. The study has therefore validated this assertion by establishing that combined M&E process can explain 25.6% change in performance of DET project. Project staff should therefore embrace the M&E processes of

Planning, implementation, Dissemination and Result utilization so as to maximize benefits accruing from M&E. Combined M&E processes had a composite mean of 3.7839 which entails that there is more to be done to ensure that M&E is fully embraced.

M&E has received support in various countries. For example in Kenya there are constitutional provisions that call for institutionalization of M&E at National and County levels of government (Ministry of Devolution and Planning, 2016). In South Africa there is ministry of Monitoring and evaluation whose aim is to design, monitor and evaluate government projects (Cloete, Rabie & De Coning, 2014) while in Malawi there is a cabinet subcommittee on project design and implementation whose objective is to oversee the implementation and monitoring of government projects and it reports to the president on the progress of projects (2017 Malawi National Budget Statement). This study therefore has validated these political and legal commitments that these countries have placed on M&E. By empirically establishing the positive influence of M&E processes on performance of DET project this study has reaffirmed the position taken by these countries on M&E institutionalization. More countries are therefore encouraged to move into institutionalization of monitoring and evaluation.

4.11 Project Management Maturity and Performance of Digital Education Technology Project

As the sixth objective, the study sought to establish the influence of project management maturity on performance of DET project in Malawi. PMM was conceptualized based on seven indicators as per the tenets of project management maturity model. These indicators were: organization's view of project management, organizational commitment to project management, formalization of project management processes, stability of project management processes in the organization, understanding of project management principles by staff in the organization, familiarity of project management principles by staff in the organization and application of project management in the organization. Each of these indicators was rated on a scale of 1-4 which represented project management maturity levels. 1 represented naïve level of project management while 4 represented naturalized level of project management maturity which is the highest maturity level.

4.11.1 Organizational View of Project Management

How an organization views project management has a bearing on its maturity as it reflects the culture of an organization in terms of project management. In this regard the maturity of the organization that implemented the DET project was determined in relation to this particular aspect. To this end respondents were asked a question regarding the organization's view of project management. Results pertaining to this question are presented in Table 4.22.

Table 4.22

Organization's View of Project Management

Description	**Maturity Level**	**Frequency**	**Percent**
Project Management is not required for success	1	4	2.2
Project Management is tolerated but sometimes it is seen as unnecessary Expenditure	2	29	15.8
Project management is recognized and accepted as part of organizational Culture	3	65	35.3
Project Management is welcomed as an essential contributor to meeting objectives of the Organization	4	86	46.7
Number of respondents		184	100
Mean Maturity Level	3.27		
Standard Deviation (DV)	0.80		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

As presented in Table 4.22, generally the respondents are of the view that the organization is normal in terms of project management with mean maturity level of 3.27 and SD of .80. Normal level of project management maturity entails that the culture of project management is entrenched in the organization. An examination of the frequencies reveals that majority of the respondents 86 (46.7%) felt that the organization looks at project management as an essential contributor to meeting the organization's objectives. This means that these respondents feel that the culture of project management in this organization is at level 4 which is a naturalized level of project management. In terms of project management being recognized and accepted as part of the organization culture 65 (35.3%) of the respondents subscribed to this view. Recognition and acceptance of project management as part of the organizational culture means that the organization is at level 3 of PMM. Thus at this level project management is normalized and many organizations aim to reach this level. Few respondents (29; 15.8%) were of the view that the organization tolerates project management but sometimes looks at it as unnecessary expenditure. This is level 2 of project management and it means that the organization is at novice level of project management. Negligible number of respondents (4; 2.2%) was of the opinion that the organization does not see project management as a requirement for success. Thus these respondents felt that the organization is at Naïve level of project management where no subscription to project management ideals is made.

4.11.2 Organization's Commitment towards Project Management

Commitment to project management is critical for the success of an organization's project endevour. It is therefore against this background that as an element of PMM of the organization, participants were asked to rate the organization in terms of project management commitment and results for the same are shown in Table 4.23.

Table 4.23

Organization's Commitment to Project Management

Description	Maturity Level	Frequency	Percent
Not Committed	1	2	1.1
Partially Committed	2	22	12
Committed	3	93	50.5
Very Committed	4	67	36.4
Number of respondents		184	100
Mean Maturity Level	3.22		
Standard Deviation (DV)	0.69		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

Table 4.23 shows that in general the respondents are of the perception that the organization is committed to project management with mean maturity level of 3.22 and SD of 0.69. This means that the organization is at a normal level in terms of its commitment to project management. A closer look at the frequencies shows that a majority of the respondents (93; 50.5%) are of the view that the organization is committed towards project management. These respondents feel that the organization is at level 3 of PMM which is a normalized level. In terms of the organization being very committed towards project management 67(36%) of the respondents are in support of this view. In this regard, these respondents feel that the organization is at level 4 of PMM which is a naturalized level of project management. Few respondents (22; 12%) are of the view that the organization is partially committed to project management. For these respondents the organization is at level 2 of PMM which is the novice level. Negligible number of respondents (2; 1.1%) are of the view the organization is not committed towards project management. Thus these respondents feel that the organization is at level 1 of PMM which is the naïve level. At this level there is no commitment to project management ideals.

These findings were echoed by participants during a face to face interview when it was reported that the organization that implemented the project is committed to the

management of the project since it has set up project management structures at all levels of the project i.e. National, District, Zonal and School levels. As an M&E official said" this organization is clever in such a way that it has project officials at various levels of the project. There is a national coordinator of the project; at district level the District Education management office has also a role to play in the project, just like the Educational Advisors at Zonal level let alone the school level.

It was further reported that stakeholders of the project were trained about the project. This entails that there was commitment on the part of the organization in terms of the management of the project. This commitment is in line with argument advanced by Backlund, Chroneer and Sundqvisit (2014) that if an organization is committed to project management, it stands to benefit in terms of project performance. Commitment to project management means that there is a culture of project management in the organization. This is therefore in tune with PMI (2015) who underscores that embracing a culture of project management is critical to the success of an organization.

4.11.3 How formal are Project Management Processes in the Organization?

The existence of formal project management processes in the organization is a signal that the organization is mature in terms of project management. It is in this particular respect that the extent to which these processes are formalized in the organization was established in this study. Respondents' perceptions in this respect were sought and the results are presented as per Table 4.24.

Table 4.24

How formal are Project Management Processes in the Organization

Description	Maturity Level	Frequency	Percent
There are no project management processes in Place	1	6	3.3
Project Management processes are informal	2	31	16.8
Generic processes are available in the organization	3	74	40.2
Formal processes are available and flexibly applied	4	73	39.7
Number of Respondents		184	100
Mean Maturity Level	3.16		
Standard Deviation (SD)	.82		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

According to the findings in Table 4.24 respondents are generally of the view that project management processes are formalized as indicated by a mean of 3.16 and SD of .82. This implies that the organization is at level 3 in terms of formalizing its project management processes. Level 3 of maturity demonstrates that an organization is normalized in terms of formalizing its project management processes. As indicated in Table 4.16, majority of the respondents 73 (40.2%) are of the view that generic processes of project management are available in the organizations. This means that the organization is at level 3 of project management and hence it is normalized. 73 (39.7%) of the respondents are of the opinion that formal processes are available and are flexibly applied in the organization. Thus for these respondents the organization is at level 4 of project management maturity which is a normalized one. 31 (16.8%) of the respondents feel that project management processes are informal in the organization. Thus for them the organization is at level 2 of project management maturity which means that the

organization is a novice in term of project management. Very few respondents (6; 3.3%) are of the view that there are no project management processes in place. Therefore to them, the organization is at level 1 of project management which entails that it is naïve in terms of project management.

Formalization of project management processes implies that the culture of project management is entrenched in the organization. The findings in this study have therefore established that the organization that implemented DET project has formal project management processes. This is in tandem with Hillson (2003) who advocates for formal project management processes so that an organization can achieve success in its projects.

4.11.4 Stability of Project management processes

Stability of project management processes is one of the key facets of project management maturity. Against this background the study sought to establish the extent of project management processes of the organization that implemented the DET project. Table 4.25 presents the summary of the results.

Table 4.25

Stability of Project Management Processes

Description	Maturity Level	Frequency	Percent
There are no project Management Processes in place	1	3	1.6
Project Management processes are immature	2	66	35.9
Project Management processes are mature and stable	3	81	44
Project Management processes are regularly updated	4	34	18.5
Number of respondents		184	100
Mean Maturity Level	2.79		
Standard Deviation (SD)	0.75		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

Results in Table 4.25 show that respondents were generally of the view that project management processes are immature with a mean rating of 2.79 and SD of 0.75.

A closer look at the indicators revealed that a majority of the respondents (81; 44%) are of the view that project management processes of the organization are mature and stable. This means that for these respondents, the organization is at level 3 of project management maturity which entails that the organization has reached the normal level of project management. On a different note though, 66 (35.95%) of the respondents held a contrary opinion as they are of the view that project management processes are immature and unstable. For these respondents therefore, the organization is at level 2 which is a novice level of project management. Still a certain proportion of the respondents (34; 18.5%) felt that project management processes are regularly updated entailing that the organization is at level 4 of PMM. According to these respondents therefore, the organization is naturalized in terms of project management. Very few respondents (3; 1.6%) were of the view that project management processes are not even there in the organization. Thus for

them the organization is at level 1 of project management maturity meaning that the organization is naïve in terms of project management.

4.11.5. Staff's understanding of principles of project management

PMM is also demonstrated by an understanding of project management principles by the staff of an organization. In this connection it was within the interest of the study to establish the maturity level at which the staff in the organization that implemented the DET project understood the principles of project management. Table 4.26 therefore presents the summary of the findings.

Table 4.26

Staff's understanding of Principles of Project Management

Description	Maturity Level	Frequency	Percent
No understanding	1	7	3.8
Basic Understanding	2	43	23.4
Thorough Understanding	3	78	42.4
Excellent understanding	4	56	30.4
Number of respondents		184	
Mean Maturity Level	2.99		
Standard Deviation (SD)	0.83		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

Table 4.26 shows that generally respondents were of the opinion that staff in the organization have a basic understanding of principles of project management with a mean maturity level of 2.99. Thus for these respondents, the organization is at level 2 of PMM which entails that the organization is at novice level in this area. Results in Table 4.23 further show that majority of respondents (78, 42.4%) feel that staff in the organization has a thorough understanding of project management meaning that the organization is at level 3 of PMM which is a normalized level. This is followed by a category of respondents (56; 30.4%) who are of the view that staff in the organization has an excellent understanding of

project management. To them the organization is at level 4 of project management which entails that the organization has reached a naturalized level of PMM. Still more there is a category of respondents (43; 23%) that holds the view that staff in the organization has a basic understanding of project management principles. To these respondents, the organization is at level 2 of PMM thereby implying that the organization is at novice level in this area. In a related development very few respondents (7; 3.8%) reported that staff in the organization has no understanding of project management principles. This means that the organization that implemented the DET project is at level 1 of PMM indicating that it is at Naïve level.

4.11.6 Staff's familiarity with project management techniques

Familiarity with project management techniques is regarded as one aspect of PMM. It is in this particular respect that an investigation regarding staff's familiarity with project management techniques was made and the findings are presented in Table 4.27.

Table 4.27

Staff's familiarity with Project Management Techniques

Description	Maturity Level	Frequency	Percent
No knowledge or expertise of project management	1	8	4.3
Basic grasp of project management	2	42	22.8
Effective use of all techniques	3	81	44
Expert use of all current techniques	4	53	28.8
Number of respondents		184	100
Mean Maturity Level	2.97		
Standard Deviation (SD)	0.83		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

According to the findings in Table 4.27, it was generally felt by the respondents that the organization is at level 2 of PMM with a mean maturity level of 2.97 and SD of

0.83. This entails that the general feeling of the respondents is that the organization is at novice level in terms of familiarity with project management techniques. Furthermore results in Table 4.14 indicate that majority of the respondents (81; 44%) are of the view that staff in the organization effectively use all project management techniques. For these respondents, the organization is at level 3 of PMM hence in as far as familiarity with project management techniques is concerned; the staff is at normal level. Still more there was a group of respondents (53; 28.8%) who felt that staff in the organization is experts of all current techniques of project management meaning that for them the organization is at level 4. At this juncture these respondents felt that the organization is at naturalized level of project management. There was still a sizeable category of respondents (42; 22.8%) who were of the opinion that staff in the organization has a basic grasp of project management techniques. According to these respondents, the organization is at level 2 of PMM. Thus the organization is at naïve level of maturity in as far as familiarity with project management techniques is concerned. Very few respondents (8; 4.3%) felt that the staff in the organization does not have knowledge or expertise of project management techniques. Thus the organization is at level 1 of PMM; a level that is naïve and has no clue about project management techniques.

4.11.7 Application of Project management in the organization

Application of project management is a key aspect of PMM. It is in this particular regard that the study investigated the level at which project management is applied in the organization that implemented the DET project. Table 4.28 presents a summary of findings in this particular regard.

Table 4.28

Application of Project Management in the organization

Description	Maturity Level	Frequency	Percent
Project management is not applied in the organization	1	5	2.7
Project management is applied occasionally	2	31	16.8
Project management is applied routinely to all projects	3	78	42.4
All activities are encompassed by the project management process	4	70	38
Number of respondents		184	100
Mean Maturity Level	3.16		
Standard Deviation (SD)	0.8		
1=Naïve Level, 2=Novice Level, 3=Normalized Level, 4=Naturalized Level			

The findings in Table 4.28 revealed that generally the respondents feel that the organization is at level 3 of maturity (with mean=3.1575 and SD=0.7976) in terms of applying the ideals of project management as reflected in table 4.15. According to results in Table 4.15, majority of the respondents (78; 42.4%) feel that project management is applied routinely to all projects hence the organization is at level 3 of project management maturity. Thus the organization that implemented the DET project is perceived to be at normal level of project management. Still more there is a category of respondents (70; 38%) who are of the opinion that all activities in the organization are encompassed by project management process which means that the organization is at level 4 which is the highest as application of project management is naturalized. Relatively few respondents (31; 16.8%) are of the view that project management is applied occasionally in the organization. Thus the organization is at level 2 of maturity where the application of project management is naïve. Very few respondents (5; 2.7%) are of the perception that project management is not applied at all in the organization meaning that the organization is at

level 1 in this regard. Thus the organization that implemented the DET project is naïve as far as the application of project management is concerned.

4.12 Composite Project Management Maturity

The study deemed it important to compare the maturity level of different facets of project management. Furthermore all facets of project management maturity were aggregated to establish the composite maturity level of the organization that implemented the DET project as shown in Table 4.29

Table 4.29

Composite Project Management Maturity

Description	N	Mean maturity level	Std.Deviation
Organization's View of Project Management	184	3.2663	0.8028
Extent to which the organization is committed towards project management	184	3.2228	0.6929
Extent to which project management processes are formalized in the organization	184	3.163	0.8202
Extent to which project management processes are stable in the organization	184	2.7935	0.75441
Extent to which staff in the organization understand principles of project management	184	2.9946	0.83304
Extent to which staff in the organization are familiar with the principles of project Management	184	2.9728	0.8326
Extent to which project management is applied in the Organization	184	3.1576	0.7976
Composite Mean and Std.Deviation		3.02	0.79

As presented in Table 4.29 the organization is perceived to have matured the highest in terms of the organization's view of project management. A mean maturity level of 3.27 and SD=0.80 is the highest level of maturity out of all the seven facets of maturity. This is seconded by organization's commitment to project management which has mean

maturity of 3.23 and SD=0.69. Formalization of project management processes came third with mean maturity level=3.16 and SD=0.82. Application of project management in the organization came fourth with mean maturity=3.16 and SD=0.8 while staff's understanding of project management principles came fifth. Ranked sixth was staff's familiarity with the principles of project management which had mean maturity=2.99 and SD=0.75. Stability of project management processes in the organization came last with mean maturity=2.79 and SD=0.75.

A composite mean of PMM was 3.01 with SD of 0.79. This implies that the composite PMM level of the organization is level 3. As earlier on intimated, this means that the organization is normalized in terms of project management. The organization is therefore mature in terms of project management.

4.12.1 Relationship between Project Management Maturity and Performance of Digital Education Technology Project

The relationship between PMM and Performance of DET project was determined using Pearson Product Moment Correlation Coefficient. The findings of the correlation between the two variables are presented in Table 4.30.

Table 4.30

Relationship between Project Management Maturity and Performance of Digital Education Technology Project

		Performance of DET project
Composite Project Management Maturity	Pearson Correlation	.488**
	Sig. (2-tailed)	.000
	N	184

****. Correlation is significant at the 0.01 level (2-tailed)**

According to the findings in Table 4.30, r=0.488. This means that there is a moderate positive relationship between PMM and Performance of DET project. The results further indicate that the relationship is statistically significant at p=0.01<0.05. These findings entail that PMM influenced the performance of DET project to a moderate extent.

The maturity of the organization should therefore be enhanced by conducting refresher programs in project management to boost staff's understanding of project management.

4.12. 2 Test of Hypothesis

In further establishing the influence of PMM on performance of DET project simple linear regression analysis technique was used. In this regard a new variable comprising of means of the seven facets of PMM was used as an explanatory variable while composite mean of DET project was used as criterion variable. The hypotheses that were tested were as follows:

H0: Project Management Maturity has no influence on the Performance of Digital Education Technology in Malawi

H1: Project Management Maturity has influence on the Performance of Digital Education Technology in Malawi

The linear model that was tested was $y=a+B_1X_1+e$ where:

y=Performance of DET project

a=constant

B_1=Beta coefficient

X_1=Project Management Maturity

e=error term

The results of the linear regression model are presented in Table 4.31 and full statistical results are in Appendix L.

Table 4.31

Project Management Maturity and the Performance of Digital Education Technology Project

Model Summaries	R	R-Square	Durbin-Watson	Unstandardized Coefficient B	Std.Error
	0.488	0.238	1.698		
(Constant)				1.793	0.254
Project Management Maturity				0.618	0.082
F(1,183)=56.890, p=0.001<0.05					
a.Dependent variable: Performance of DET project					
b.Predictors: Project Management Maturity					

As shown in Table 4.31, R=0.488 which implies that there is a positive moderate correlation between PMM and performance of DET project in Malawi. The coefficient of determination (R^2=0.238) indicates that 23.8% change in performance of DET project can be explained by PMM. A beta value of 0.445 means that a unit increase of PMM contributes to 44.5% increase in performance of DET project. The model is statistically significant at P=0.001<0.05. The Durbin-Watson statistics of 1.698 is closer to 2 which entails that there was no autocorrelation. The F ratio was found to be significant since F (1, 183) =57.266, P=0.001<0.05. This means that PMM maturity had a significant influence on performance of DET project. From these findings the null hypothesis was rejected and the alternative hypothesis accepted. In this connection PMM had a significant influence on DET project performance in Malawi.

Bourne and Tuffley (2007) as cited in Demir and Kocabs (2010) have emphasized the critical role PMM plays in the enhancement of project performance. They argue that organizations which improve their PMM improve their projects in terms of improved schedule and budget predictability; improved cycled time; increased productivity and improved quality. The findings are therefore in tandem with this assertion since the study has established that PMM positively influences performance of DET project.

The results resonate with an empirical study that was carried out by Mir and Pinnington (2014) in United Arab Emirates (UAE). Using descriptive survey design they established that PMM has a statistically significant positive influence on project success such that 44.9% variation in project success is explained by PMM. In view of the fact that this study has established a moderate (r=0.488) influence of PMM on performance of DET project, the two studies are in agreement.

The findings also present a situation that echoes argument advanced by Backlund, Chroneer and Sundqvisit (2014) regarding the role of PMM in project success. They argue that organizations with higher PMM levels are anticipated to be successful in terms of project efficiency and effectiveness. The study has therefore added empirical evidence to this claim by establishing that a unit increase in PMM leads to 44.5% increase in performance of DET project as presented in table 4.25. Indeed this is in line with Brooks and Clark (2009) who conclude that the whole concept of project management maturity model is to improve project performance.

Results in this study are also in tandem with project management maturity model as propounded by Hilsson (2003) who stipulates that an organization goes through 4 levels in terms of PMM where levels 1, 2, 3 and 4 entail naïve, novice, normalized and naturalized levels of PMM respectively. According to Hilsson, the higher the maturity level the better the project performance. This study has therefore validated this claim by establishing that PMM has a positive moderate influence on performance of DET project. A composite mean maturity level of the organization that implemented DET project was found to be 3.01815 which indicates that the organization has matured in terms of project management hence the gains in DET project performance are justified.

It should however be stated that the study has contradicted some studies. For instance in a study conducted in South Africa by Labuschagne et al.(2008) cited in Pretorius et al. (2012), it was found out that there is no significant correlation between maturity level of an ICT organization and project success. This position was echoed by Pretorius, Steyn and Jordaan (2012) who established that there is no significant relationship

between PMM levels and project success. But this study has established that project management maturity level and project performance are positively related. This entails that the relationship between maturity level and project performance is met with mixed claims. This calls for more research in this area in order to throw more light to this tension.

4.13 Moderating influence of Project Management Maturity on the Relationship between Monitoring and Evaluation Processes and performance of Digital Education Technology Project

The seventh objective was about establishing the moderating influence of PMM on the relationship between Monitoring and Evaluation processes and performance of DET project in Malawi. This was based on the assumption that monitoring and evaluation processes can be ably executed in an organization that is mature in terms of project management thereby enhancing the performance of DET project. The following null hypothesis was therefore tested in order to determine the influence of project management maturity on the relationship between the two variables.

H0: The influence of M&E processes on performance of DET project in Malawi does not depend on Project Management Maturity

H1: The influence of M&E processes on performance of DET project in Malawi depends on Project Management Maturity

This hypothesis was tested in order to establish the moderating influence of project management maturity on performance of DET project in Malawi. Moderation in regression analysis seeks to establish the relationship between predictor and criterion variables as a function of a third variable. The objective is to see how the influence of the independent variable on dependent variable changes upon the introduction of a moderator (Field, 2013). In this study moderate variable was PMM of the organization that implemented the DET project. The moderating influence was measured in terms of how the influence of M&E processes on performance of DET project changes when the moderating factor (Project Management Maturity) is introduced. Project Management Maturity improves M&E processes which in turn enhances project performance. Mean Performance of DET project

was used as the dependent variable while the composite mean of M&E processes was the independent variable. Project Management Maturity was the moderator. This relationship was expressed in the linear regression model: $y=a+B_5X_5+B_6X_6+B_7X_5X_6+e$ where:

y=Performance of DET project

$B_5 \ldots n$=Beta Coefficient

X_5=Combined M&E processes

X_6=Project Management Maturity

X_5X_6=Interactive term

e=error term

The study used stepwise regression analysis technique to establish the influence of project management maturity on the relationship between M&E processes and performance of DET project. In this regard three regression models were used. Model one established the influence of M&E processes on performance of DET project. On this one composite means of M&E processes and performance of DET project were utilized as independent and dependent variables respectively. Model two introduced the moderator (Project Management Maturity) to model 1. Thus model two had two independent variables i.e. M&E processes and Project Management Maturity. Model three was comprised of all variables in model 2 plus the interaction term (product of M&E processes and Project Management Maturity) with performance of DET project as criterion variable. Moderation is said to have occurred if R^2 in model 1 is significantly different from R^2 in model 3. Table 4.32 is a summary of the results as per the regression analysis. Full statistical results are in Appendix M.

Table 4.32

Monitoring and Evaluation Processes, Project Management Maturity, Interaction Term and Performance of Digital Education Technology Project

Model	R	R Square	Change Statistics					Durbin-Watson
			R Square Change	F Change	df1	df2	Sig. F Change	
1	.506[a]	0.256	0.252	62.511	1	182	0	
2	.560[b]	0.313	0.058	15.236	1	181	0	
3	.579[c]	0.336	0.022	6.011	1	180	0.015	1.76

a. Predictors: (Constant), Zscore: Mean Monitoring and Evaluation Processes

b. Predictors: (Constant), Zscore: Mean Monitoring and Evaluation Processes, Mean Project Management Maturity

c. Predictors: (Constant), Zscore: Mean Monitoring and Evaluation Processes, Mean Project Management Maturity,

Interaction Term

d. Dependent Variable: Performance of DET Project

Step 1: M&E processes and Performance of DET project

Table 4.32 shows that R squared in model 1 is 0.256 implying that 25.6% of variance in performance of DET project is explained by Monitoring and Evaluation processes. The F ratio was F (1, 182) =62.511, P=0.001<0.05 therefore the model was statistically significant. The overall Durban Watson test was 1.76 which is close to 2 hence there was no autocorrelation.

Step 2: M&E processes, Project Management Maturity and Performance of DET project

When the moderator was introduced in model 2, the influence of predictors on performance of DET improved significantly. Table 4.26 shows that R^2 was 0.313 which means that a combination of M&E processes and project management maturity explains 31.3% of variation in performance of DET project. R^2 change was 0.058 meaning that there was an increase of 5.8%. The model is statistically significant since F (2,181) =41.318, P=0.001<0.05. This implies that the influence of independent and moderating variables on dependent variable was significant in the model.

Step 3: M&E processes, Project Management Maturity, Interaction Term and Performance of DET project

When the interaction term was introduced in model 3, the influence of three predictors on performance of DET improved significantly. R^2 moved from 0.313 to 0.336. This entails that with the inclusion of an interaction term the model explained 33.6% of variation in performance. As per R square change, there was an increase of 2.2% from model 2 and more so 8% from model 1. F ratio was F (3, 180) = 30.12, P=0.001<0.05 hence the model was significant. This implies that the influence of independent and moderating variables on dependent variable was significant in the model. There was a change in F from 62.511 to 30.181 showing a decrease when the interaction term was added. This indicates that the regression of M&E processes and Project Management Maturity on DET project performance was significant.

The test has demonstrated that there is a relationship among the three variables in view of the fact that project management maturity has improved the goodness of fit in the relationship between M&E processes and performance of DET project by 8% which is statistically significant at 0.05. In light of this the null hypothesis was rejected and alternative hypothesis accepted. In conclusion therefore, project management maturity moderates the relationship between M&E processes and performance of DET project.

The study was premised on the assumption that project management maturity creates an enabling environment where the execution of Monitoring and Evaluation processes is expedited. Thus it was anticipated that the influence of M&E processes on performance of DET project may increase in an organization that is mature in project management. The study has therefore validated this assumption by demonstrating that with project management maturity, R^2 increases from 25.6% to 33.6% indicating an increase of 8% improvement regarding the variation in performance of DET project.

The findings are therefore in agreement with Khander, Koolwal and Samad (2010) who describe M&E as a demanding exercise which requires systematic and objective

execution. It is an organization that is competent in project management that would execute M&E in a systematic manner for it to positively influence performance of a project.

Kyalo et.al (2015) argue that M&E can have a positive influence on project performance if it is properly planned and implemented and also that the M&E results should be communicated to stakeholders and utilized for project improvement. It is clear that organization that is mature in terms of project management has the potential to carry out M&E processes of planning, implementation, dissemination and result utilization with diligence. Therefore by establishing project management maturity as a moderating factor on the influence of M&E processes and performance of DET project, this study is in line with the position held by Kyalo et al. It is the competence in project management of the organization that implemented DET project that could have expedited the M&E processes leading to positive contribution to performance of DET project.

Results of this study echoes the Joint Committee on Standards for Educational Evaluation (2011) which calls for accuracy, feasibility and utility with respect to monitoring and evaluation. These evaluation standards can ably be actualized in an organization that is mature in terms of project management. The maturity of the organization that implemented DET project therefore created an enabling environment for the evaluation standards to be executed. This enabling environment boosted the influence of these standards on performance of DET project.

De Kool and Van Buuren, (2004) contend that the goal of M&E is not the report, but the process in which actors collect, interpret, and learn from information about the project. This goal of M&E requires a mature organization for execution. It has been demonstrated that the organization that implemented the DET project is at level 3 hence it is mature in terms of project management. It may be this maturity that ensured the understanding of this goal of M&E which enabled the DET project to benefit from M&E in terms of performance.

In summary the test of hypotheses and their outcomes are presented in Table 4.33

Table 4.33

Summary of Test Hypotheses

Objective	Hypothesis	Regression model	Results	Remarks
To establish the Influence of planning for Monitoring and evaluation on the performance of DET project in Malawi	Hypothesis 1 Planning for monitoring and evaluation has a significant influence on the performance of DET project in Malawi	$y=a+B_1X_1+e$	$R^2=(0.172)$ F=(1, 183)=37.852 P=0.001<0.05	Accept
To establish the influence of implementation of monitoring and evaluation on the performance of DET project in Malawi	Hypothesis 2 Implementation of Monitoring and Evaluation has a significant influence on the performance of DET project in Malawi	$y=a+B_2X_2+e$	$R^2=0.216$ F=(1, 183)=50.029 P=0.001<0.05	Accept
To establish the influence of dissemination of monitoring and evaluation results on the performance of DET project in Malawi	Hypothesis 3 Dissemination of M&E results has a significant influence on the performance of DET project in Malawi	$y=a+B_3X_3+e$	$R^2=0.135$ F=(1, 183)=28.309 P=0.001<0.05	Accept
To establish the influence of Utilization of M&E results on performance of DET project in Malawi	Hypothesis 4 Utilization of M&E results has a significant influence on the performance of DET project in Malawi	$y=a+B_4X_4+e$	$R^2=0.239$ F=(1, 183)=57.266 P=0.001<0.05	Accept
To establish the combined influence of	Hypothesis 5	$y=a+B_5X_5+e$	$R^2=0.256$ F=(1, 183)=62.511	Accept

M&E processes on the Performance of DET project in Malawi	The Combined influence of M&E processes has a significant influence on the performance of DET project in Malawi		P=0.001<0.05	
To establish the influence of Project Management Maturity on the Performance of DET project Malawi	Hypothesis 6 Project Management Maturity has a significant influence on the performance of DET project in Malawi	$y=a+B_6X_6+e$	R^2=0.238 F(1, 183)=56.890 P=0.001<0.05	Accept
To establish the moderating influence of project management maturity on performance of DET project in Malawi	Hypothesis 7 The influence of M&E processes on the performance of DET project depends on project management maturity	$y=a+B_5X_5+B_6X_6+B_7X_5X_6+e$	Overall R2=.336 F1(1,182) =62.511 P=0.001<0.05 F2(2,181)=41.318 P=0.001<0.05 F3(3,180)=30.12 P=0.001<0.05 Increase in R^2=8%	Accept

CHAPTER FIVE
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The aim of this chapter is to present a summary of key findings and conclusions based on data analyzed, presented and discussed in chapter four. The chapter has also presented recommendations based on the evidence that this study has brought to the fore. The contributions to body of knowledge that this study has made are also highlighted in this chapter. In the final analysis the chapter has provided suggestions for further studies.

5.2 Summary of Findings

The purpose of this section is to present a summary of findings. The summary is structured as per the objectives.

5.2.1 Planning for Monitoring and Evaluation and Performance of Digital Education Technology Project

It was within the confines of the study to establish the extent to which Planning for M&E was done in the DET project. Furthermore the influence of Planning for M&E on the performance of DET project was also investigated. First, the study has found out that Planning for Monitoring and Evaluation was executed to a moderate extent. Second, it has been established that Planning for Monitoring and Evaluation has a significant positive influence on the performance of DET project. In this regard, 17.2% change in the performance of DET project was accounted for by Planning for Monitoring and Evaluation.

5.2.2 Implementation of Monitoring and Evaluation and Performance of Digital Education Technology Project

The study examined the extent to which implementation of M&E was done in the DET project. Additionally the study sought to establish the influence of implementation of Monitoring and Evaluation on the performance of DET project. First, it has been established that implementation of Monitoring and Evaluation was done to a moderate extent. Second, the study has revealed that implementation of M&E had a significant

positive influence on the performance of the DET project to the extent that 21.6% variation in the performance of DET project was explained by implementation of M&E.

5.2.3 Dissemination of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

The extent to which Dissemination of M&E results was done in the DET project was determined and it was found out that it was done to a moderate extent. On the relationship between the two variables, the study has established that Dissemination of M&E results had a statistically significant influence on the performance of DET project such that 13.5% change in the performance of DET project was explained by Dissemination of M&E results.

5.2.4 Utilization of Monitoring and Evaluation Results and Performance of Digital Education Technology Project

It was also within the realm of this study to determine the extent to which M&E results were utilized in the DET project and it was found out that the utilization was to a moderate extent. Further investigation in terms of the influence of Utilization of M&E results on the performance of DET project was undertaken and it was revealed that Utilization of M&E results had a statistically positive influence on the performance of DET project. In this vein the study has established that 23.9% Change in the performance of DET project was explained by Utilization of M&E results.

5.2.5 Combined Monitoring and Evaluation Processes and Performance of Digital Education Technology Project

The overall extent to which M&E processes were executed in the DET project was established and it was found to be moderate. Furthermore the findings have shown that combined M&E processes have a strong positive influence on the performance of the DET project. At this juncture, 25.6% variation in the performance of DET project was explained by the combination of M&E processes. Thus when the M&E processes are combined, the project stands to benefit more than each of the M&E processes independently.

5.2.6 Project Management Maturity and Performance of Digital Education Technology Project

The study established the project management maturity level of the organization that implemented the DET project. In this particular respect, the study has demonstrated that the organization is at level 3 of project management maturity which means that the culture of project management has been normalized. The relationship between project Management Maturity and performance of the DET project was determined and it has been established that the former has a significant positive influence on the latter. To this end the study has revealed that 23.8% change in the performance of DET project was explained by Project Management Maturity.

5.2.7 Project Management Maturity and the Relationship between Monitoring and Evaluation Processes and Performance of Digital Education Technology Project.

It was the objective of the study to determine whether or not the influence of M&E processes on Performance of DET project depended on Project Management Maturity. Using stepwise regression technique, the findings have shown that the influence of M&E processes on the performance of DET project depended on project Management Maturity. In this connection the project management maturity increased the influence of M&E processes on the performance of DET project by 8%.

5.3 Conclusions

The aim of this section is to present conclusions of the study. Research objective one sought to establish the influence of planning for monitoring and Evaluation on the performance of DET project. The indicators that were used to address this research question were scope of Monitoring and Evaluation, planning of M&E activities, appropriateness of data collection techniques, appropriateness of data analysis techniques and stake holder participation in Monitoring and Evaluation. This study has concluded that Planning for monitoring and Evaluation significantly influenced the performance of DET project in Malawi. This implies that there is need to pay attention to planning during monitoring and evaluation undertaking.

It was the objective of the study to determine the influence of implementation of Monitoring and Evaluation on the performance of DET project. Using coordination of M&E activities, fulfillment of M&E responsibilities, timeliness in the execution of M&E undertaking and commitment to M&E undertaking the study concluded that implementation of M&E has a significant positive influence on performance of DET project. In this regard, the improvement of implementation of M&E is critical.

The study also sought to establish the influence of dissemination of M&E results on the performance of DET project. Clarity of M&E reports, clarity of plan for dissemination of M&E results, improvement of M&E results due to dissemination feedback and stakeholder involvement in the dissemination of M&E results were used as indicators of Dissemination of M&E results. The study therefore concluded that Dissemination of M&E results has a significant positive influence on the performance of DET project. It was further concluded that dissemination of M&E results should be enhanced so that the DET project could benefit much from M&E undertaking.

The study further determined the influence of utilization of M&E results on the performance of DET project. In order to address this Utilization of M&E results was guided by use of M&E results to improve project implementation, use of M&E results to improve project design, Use of M&E results to improve quality of project intervention and use of M&E results to improve utilization of financial and material resources as indicators. The study concluded that utilization of M&E results has a significant influence on performance of DET project. Utilization of M&E results should therefore be encouraged to improve the performance of DET project.

It was the objective of the study to establish the influence of combined M&E processes on the performance of DET project. The indicators that were used to conceptualize M&E processes were planning for monitoring and Evaluation, implementation of Monitoring and Evaluation, Dissemination of Monitoring and Evaluation results and utilization of Monitoring and evaluation results. It was concluded that combined M&E processes has a strong positive influence on the performance of DET

project in Malawi. It was therefore emphasized that all M&E processes in the organization should be embraced and improved. To benefit much from M&E processes, a holistic approach is needed such that all processes are attended to.

The focus of the study was also to determine the influence of project Management maturity on the performance of DET project in Malawi. Guided by organization's view of project management, organization's commitment to project management, formalization of project management processes, stability of project management processes, staff's understanding of principles of project management, staff's familiarity with project management principles and application of project management as indicators, the study concluded that project management maturity has a significant positive influence on performance of DET project in Malawi. It was further concluded that project management should be maintained and improved in the organization to ensure that DET project performance is enhanced.

Lastly the study established the moderating influence of project management maturity on the influence of M&E processes on the performance of DET project in Malawi. It was concluded that the influence of M&E processes on the performance of DET project depended on project management maturity. In this connection, the influence of M&E processes on performance of DET project increased by 8% as a result of project management maturity. The organization should therefore continue to embrace project management.

5.4 Recommendations

Based on the research findings the following recommendations are made.

In view of the fact that Planning for M&E had a moderate influence on the performance of DET project, the implementation organization should improve on this particular aspect of M&E so that it is executed to a large extent. The fact that it was done to a moderate extent and influenced the performance of DET project positively and moderately implies that the organization would benefit more if this component of M&E is done to a large extent. As

project implementers expressed their exclusion in planning for M&E, their inclusion in this exercise would boast its execution.

Implementation of M&E was done to a moderate extent and had a moderate effect on performance of DET project. In this regard the organization should intensify supervision of M&E implementation so that the execution is done to a large extent. One way would be to ensure that M&E activities are done in a timely manner as this was an aspect with least execution of all the indicators of Implementation of M&E.

Dissemination of M&E results positively influenced the performance of DET project but it was the least executed component of M&E. The organization should consider capacity building initiatives in dissemination in order to yield more benefits in as far as project performance is concerned.

Since it was established that utilization of M&E results was the component that had more influence on DET project performance than all aspects of M&E, the organization should continue to invest in it. The fact that it was moderately executed means that there is still room for improvement.

It has been established that combined M&E processes have a strong positive influence on the performance of DET project. The organization should therefore embrace all M&E processes to ensure maximum benefit from M&E undertaking. Additionally the Ministry of Education should encourage that projects in the sector should have an M&E component. That way, interventions being implemented in the sector might address challenges in it.

The study has found out that PMM has a positive influence on performance of DET project and that it increases the influence of M&E processes on the same. In this regard the implementation organization and Ministry of Education should invest more in project management trainings such that educational projects are implemented in an environment that has an improved project management capacity.

5.5 Contribution to Knowledge

M&E literature has emphasized on the role M&E plays in the enhancement of project performance. However the claim has been mostly based on theoretical studies. Furthermore those that have taken an empirical route have not incorporated project performance as a dependent variable based on experimental or correlational design studies to establish the magnitude of benefit a project would get from M&E. This study has contributed to the role of M&E in an empirical fashion. It has thus established the magnitude of contribution M&E makes to project performance based on empirical evidence. This study might be the first one in Malawi to arrive at such a claim.

Most of the studies that have made claims about the significance of M&E on project performance have not considered the complex nature of project performance such that they have not considered the notion of moderation. By establishing that project management maturity moderates the influence of M&E processes on performance of M&E the study has demonstrated that project performance is a complex phenomenon which is influenced by a myriad of factors.

Though M&E is a process such that all components are important to the performance of DET project, the study has established that utilization of M&E has the strongest influence out of all processes on performance of DET project. This reaffirms calls by M&E theorists that utilization of M&E result be treated as an important aspect of M&E.

5.6 Suggestions for Further Studies

The study has established that M&E processes have a positive influence on performance of DET project however all the processes were executed to a moderate extent. It would therefore be interesting for prospective researchers to establish factors that influence the execution of monitoring and evaluation processes. Determination of these factors may inform the development of strategies that can be used to improve the execution of M&E processes.

Prospective researchers should also consider investigating the influence of M&E processes on performance of projects in other fields. The focus of this study was a project in the field of education. Such kind of study may enhance the generalizability of knowledge claims made in this study.

The study has established that Utilization of M&E result is the M&E component that had highest influence on performance of DET project. Prospective researchers should therefore investigate why that was so by exploring factors that influence M&E result utilization of educational projects in Malawi. Related to this is the notion of dissemination of M&E result which was found to be of lowest influence on the performance of DET project in Malawi. It may also be interesting for prospective researchers to examine factors that influence dissemination of M&E results of educational projects in Malawi.

As project implementers were of the view that they were not adequately involved in the conceptualization of the M&E process, it would be interesting if the notion of participation is explored. One way would be to include it as a moderating factor on the influence of M&E processes on performance of DET project.

The study used a correlational design to gauge the influence of M&E processes on performance of DET project. It should be noted that using this methodological framework the study has just established co-variation between M&E processes and performance of DET project. Future researchers should strive for causative knowledge claims based on experimental designs. In this regard a comparison in performance should be made between projects that have M&E component and those that have not. This may establish M&E as a cause of enhanced project performance.

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APPENDICES

Appendix A: Letter of Introduction

PRINCIPAL

Prof Richard Tambulasi, PhD

CHANCELLOR COLLEGE

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Reference no: 2018/03/2018

14th March, 2018

OFFICE OF DEAN OF EDUCATION

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

RE: LETTER OF INTRODUCTION

I write to confirm that Mr. Symon Winiko is a member of staff in the School of Education and a doctoral candidate at University of Nairobi in Kenya. His intended study focuses on the influence of monitoring and evaluation processes and project management maturity on the performance of digital education technology project (Unlocking Talent) in Malawi. Currently, he is scheduled to collect data in the field. Please assist him accordingly. Should you have further questions about him, please do not hesitate to contact me.

Yours sincerely,

UNIVERSITY OF MALAWI
CHANCELLOR COLLEGE
2018 -03- 14
DEAN
FACULTY OF EDUCATION

Symon Ernest Chiziwa, PhD

Dean, School of Education

Appendix B: Questionnaire for M&E officer, Project Coordinator, Standard 1 Project Implementer and Standard 2 Project Implementer

You have been involved in the implementation of the Digital Education Technology (Unlocking Talent) project. You are therefore being requested to provide information on monitoring and evaluation processes, maturity of the organization to manage the project and the performance of the project as defined by literacy and numeracy performance of standard 1 and 2 learners.

The information being sought in this questionnaire is meant for educational research purposes only and will not be used against anyone. Your responses will be confidential. Your name is not required. Please answer truthfully following instructions for each question. Thank you in advance.

A. Respondents' Information (Please tick as appropriate)

1. Gender [ ] Male [ ] Female
2. Age:
3. Academic Qualification : [ ] JC [ ]MSCE [ ] Diploma [ ] Bachelor's Degree [ ] Master's Degree [ ] PhD
4. Respondent capacity [ ] M&E official [ ] Project Coordinator [ ] Standard 1 Project Implementer [ ] Standard 2 Project Implementers
5. Work Experience in years:
6. Project Work Experience in Years

B. Performance of Digital Education Technology Project (Unlocking Talent Project)

7. Listed below were the expected achievements of the Digital Education Technology project (Unlocking Talent Project). Indicate in your opinion the extent to which each

of the following was achieved in the project from a score of 1-5 (where 1=not at all, 2=to a little extent, 3=the moderate extent, 4=to a great extent, 5=to a very great extent)

Performance of DET project (Unlocking Talent Project)	**Response**				
	5	4	3	2	1
Willingness of learners to ask questions					
Willingness of learners to answer questions					
Acquisition of literacy skills within time					
Learners participation in numeracy lessons					
Learners Participation in literacy lessons					
Acquisition of numeracy skills within time					
Teachers interest in the use of technology					
Schools readiness to continue with the DET intervention after the project has ended					
Literacy performance of learners has improved					
Numeracy performance of learners has improved					

How has the project (unlocking Talent) performed with regard to the following?

a. Learners performance in Literacy

_____

_____

b. Learners Performance in numeracy

_____

_____

c. Teachers attitude towards technology

_____

_____

d. Sustainability of the use of technology in the school

_____

_____

C. Planning for Monitoring and Evaluation

8. The list below contains factors that demonstrate proper planning of monitoring and evaluation undertaking. Indicate in your opinion the extent to which each factor was achieved as a result of planning for M&E of the Digital Education Technology (Unlocking Talent) project from a score of 1-5 (where 1=not at all, 2=to a little extent, 3=the moderate extent, 4 =to a great extent, 5=to a very great extent

Planning for M&E	**Response**				
	5	4	3	2	1
1. The scope of monitoring and evaluation was well defined					
2. M&E activities were well planned					
3. Data collection techniques used were appropriate					
4. Data collected for the project was properly analyzed					
5. Planning for M&E was done in a participatory manner					

a. Why was it important to plan for monitoring and evaluation of the digital education technology project (Unlocking Talent project)?

_____

_____

_____

b. What challenges if any were faced during the planning of Monitoring and evaluation of the unlocking talent project?

_____

_____

_____

D. Implementation of Monitoring and Evaluation

9. The following should be achieved during the implementation of monitoring and Evaluation undertaking. Indicate in your opinion the extent to which they were achieved during M&E implementation of the Digital Education Technology (Unlocking Talent) project from a score of 1-5 (where 1=not at all, 2=to a little extent, 3=the moderate extent, 4 =to a great extent, 5=to a very great extent

Implementation of M&E	**Response**				
	5	4	3	2	1
1. M&E activities were properly coordinated					
2. M&E responsibilities that were assigned were fulfilled					
3. The M&E exercise was done in timely manner					
4. There was commitment in the implementation of M&E activities					

a. How was the implementation of monitoring and evaluation of the unlocking talent project done? Was it effective?

_____

_____

_____b.

What challenges if any were faced during the implementation of monitoring and evaluation?_____

_____

_____

E. Dissemination of Monitoring and Evaluation

10. Listed below are factors that should be achieved during dissemination of monitoring and Evaluation results. Indicate in your opinion the extent to which they were achieved during the dissemination of M&E results of the Digital Education Technology (Unlocking Talent) project from a score of 1-5 (where 1=not at all, 2=to a little extent, 3=the moderate extent, 4 =to a great extent, 5=to a very great extent)

Dissemination of M&E results	**Response**				
	5	4	3	2	1
1. M&E reports prepared were clear					
2. The plan of dissemination of M&E results was clear					
3. Dissemination feedback was useful in improving the M&E exercise					
4. Stakeholders were actively involved in the dissemination of M&E findings					

a. Were M&E results for the unlocking talent project shared to stakeholders?

_____

_____

_____

b. Why is it important to share M&E results to stakeholders?

_____

_____

_____

F. Utilization Of Monitoring And Evaluation Results

11. Listed below are ways of utilizing monitoring and evaluation results in a project. Indicate in your opinion the extent to which results were utilized for each of the following ways in the Digital Education Technology (Unlocking Talent) project on a score of 1-5 (where 1=not at all, 2=to a little extent, 3=the moderate extent, 4 =to a great extent, 5=to a very great extent)

Utilization of M&E results	**Response**				
	5	4	3	2	1
1. M&E results were used to improve the implementation of the project activities such as building of satellite centers					
2. M&E results improved the design of the project					
3. M&E results improved the quality of project interventions such as literacy and numeracy lessons					
4. M&E results improved use of financial and material resources of the project.					

How were the Monitoring and Evaluation results of the project used?

_____

_____

G. Project Management Maturity

12. The aim of the following questions is to assess the capability of the organization in terms of the management of the unlocking talent project. Tick one answer from a list of 4 answers pertaining to each question.

Question	**Possible Answer (Tick only one)**
What is the organization's view of project management?	1. Project Management is not required for success 2. Project management is tolerated but sometimes is seen as unnecessary expenditure 3. Project management is recognized and accepted as part of organizational operations

	4. Project management is welcomed as an essential contributor to meeting objectives of the organization
To what extent is the organization committed to systematic management of projects?	1. Not committed 2. Partially committed 3. Committed 4. Very committed
How formal are project management processes in the organization? Are they fully defined, with clear scope and objectives?	1. There are no project management processes in place 2. Processes are informal and specific to particular projects 3. Basic processes exist covering most aspects of the projects 4. Formal processes are flexibly applied to match requirements
How stable are project management processes in this organization?	1. There are no project management processes in place 2. Project management processes are immature and still developing 3. Project management processes are mature and stable 4. Project management processes are regularly updated

To what extent does the staff understand the principles of project management?	1. No understanding 2. Basic understanding 3. Thorough understanding 4. Excellent understanding
How familiar is the staff in the organization with project management techniques?	1. No knowledge or expertise of project management techniques 2. Basic grasp of standard techniques 3. Effective use of all main techniques 4. Expert use of all current techniques
To what extent is project management applied in the organization?	1. No application of project management processes 2. Applied to occasional projects 3. Routinely applied to all projects 4. All activities are encompassed by the project management process

What is your view regarding the management of the DET (Unlocking Talent Project)?_____

_____

_____

Thank You Very Much

Appendix C: Interview Guide for M&E team and Project Coordinators

The purpose of this interview is to collect information on the influence of M&E processes on the performance of digital educational technology projects in Malawi and the moderating influence of project management on the relationship between the two variables. The information collected will be used for academic purposes only and will be handled with confidentiality and academic professionalism it deserves.

Your willingness to participate in this interview will be very much appreciated.

Section A: Demographic Information

1. What is your role in the DET project?
2. For how long have you been involved in this project

Section B: Performance of Digital Education Technology Project

How has the project performed in relation to learners' performance in 1.Literacy? 2. Numeracy?

What challenges if any did the project encounter?

Section B. Planning for M&E

3. What factors did you consider when planning for M&E of DET project?
4. Do you think planning for M&E is important for the success of the project? Why?
5. What challenges did you encounter during planning for M&E? How did you address these challenges

Section C. Implementation of M&E

6. How did you experience the implementation of M&E for this project? (Probe on coordination, fulfillment of roles and responsibilities, Stakeholder participation)
7. What challenges if any did you face during the implementation of M&E?

Section D. Dissemination of M&E Results

8. Were the M&E results communicated to stakeholders? If yes how? Probe on strategies for dissemination
9. Do you think dissemination of M&E results is important? Why?
10. What challenges did you face during the dissemination of M&E results for the Digital Education Technology Project?

Section E. Utilization of M&E Results

11. In what ways were M&E results used?
12. Why is it important to use M&E results?
13. What challenges were encountered during utilization of M&E results?

Section F. Project Management Maturity

Culture

14. Do you believe that project Management is important? Why?

Processes

15. Does the organization follow principles of project management when implementing its projects? If yes How? If No, why?

Experience

16. Do staffs in the organization understand the issue of project management? Probe on the level of understanding.
17. Do staffs have the practical experience of project management? Probe on the level of experience

Application

18. To what extent is project management applied in the organization's projects?

Appendix D: Krejcie & Morgan Table

Table 3.1

Table for Determining Sample Size of a Known Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	346
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	354
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	191	1200	291	6000	361
45	40	170	118	400	196	1300	297	7000	364
50	44	180	123	420	201	1400	302	8000	367
55	48	190	127	440	205	1500	306	9000	368
60	52	200	132	460	210	1600	310	10000	370
65	56	210	136	480	214	1700	313	15000	375
70	59	220	140	500	217	1800	317	20000	377
75	63	230	144	550	226	1900	320	30000	379
80	66	240	148	600	234	2000	322	40000	380
85	70	250	152	650	242	2200	327	50000	381
90	73	260	155	700	248	2400	331	75000	382
95	76	270	159	750	254	2600	335	1000000	384

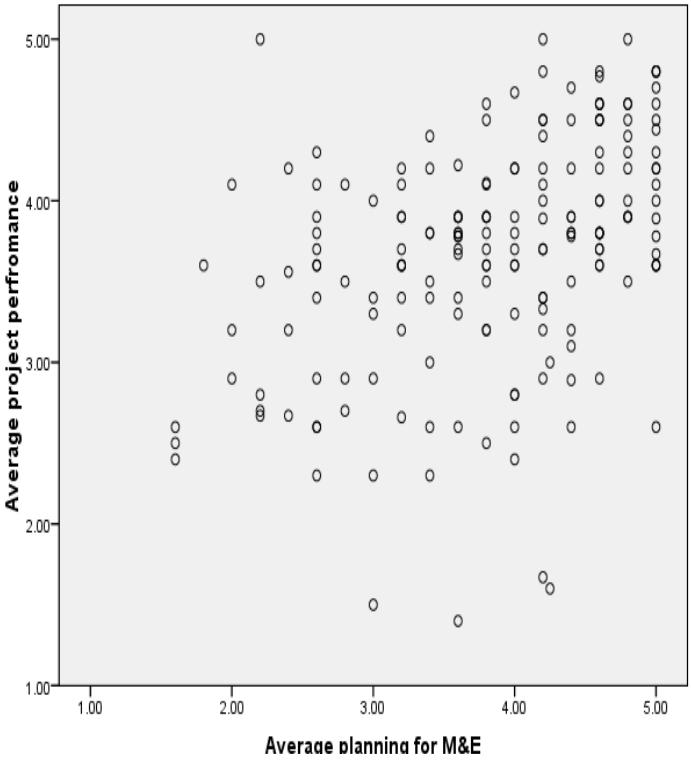
Note: N is Population Size; S is Sample Size *Source: Krejcie & Morgan, 1970*

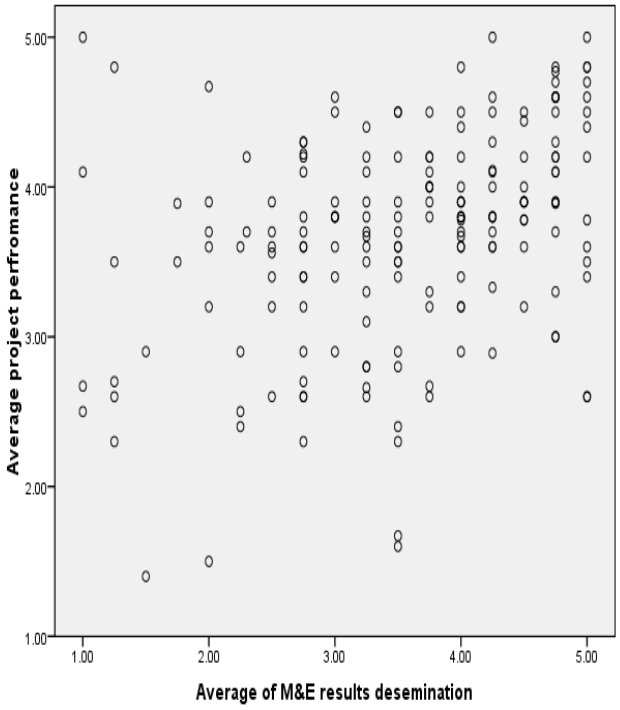
Appendix E: Collinearity Statistics

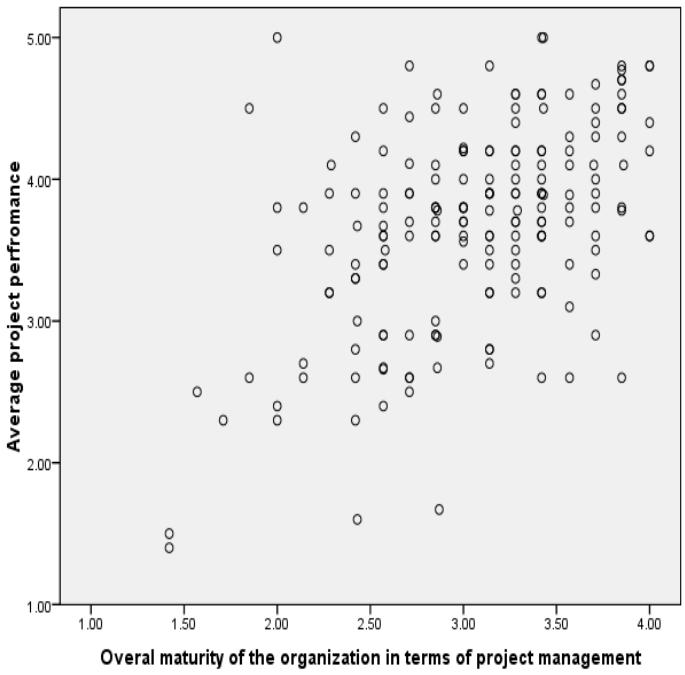
Models		Tolerance	VIF
1	**Coefficients of Planning for M&E**		
	scope of M&E	0.516	1.939
	M&E activities were well planned	0.489	2.046
	Data collection Techniques were appropriate	0.562	1.778
	Data collected for the project was appropriately analyzed	0.709	1.411
	Planning for M&E was done in a participatory manner	0.667	1.498
2	**Implementation of M&E**		
	Coordination of M&E activities	0.548	1.826
	Fulfillment of M&E responsibilities	0.499	2.004
	M&E exercise was done in a timely manner	0.566	1.9
	There was commitment in the Implementation of M&E	0.467	2.142
3	**Dissemination of M&E Results**		
	Clarity of M&E report	0.479	2.088
	Plan for dissemination was clear	0.555	1.801
	Dissemination feedback improved M&E results	0.418	2.393
	There was stakeholder involvement in the dissemination of M&E results	0.671	1.49
4	**Utilization of M&E results**		
	M&E results were used to improve implementation of project activities	0.642	1.557
	M&E improved the design the project	0.713	1.403
	M&E improved the quality if project Interventions	0.694	1.444
	M&E results improved use of material and financial resources	0.756	1.324
5	**Project Management Maturity**		

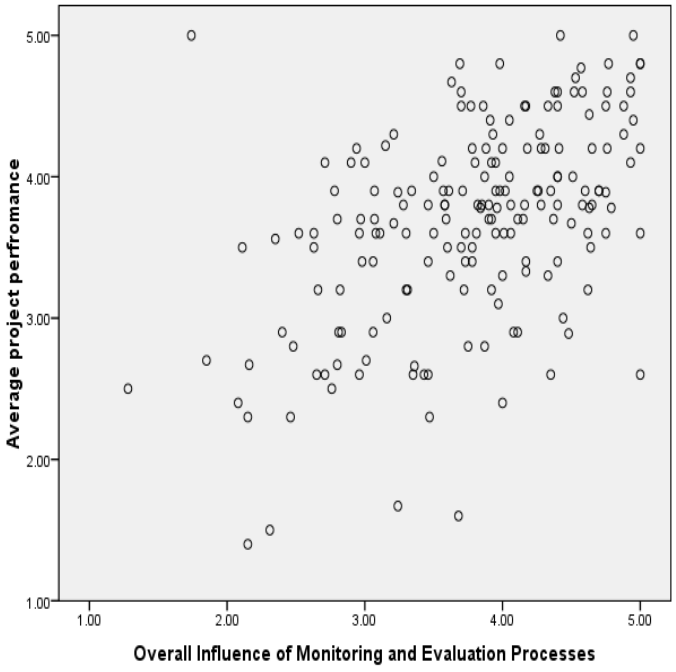
	Organization's view of project Management	0.695	1.438
	Organization's commitment to systematic management of projects	0.607	1.647
	Formality of Project Management Processes	0.794	1.259
	Stability of project management Processes	0.688	1.454
	Staff understanding of project management principles	0.481	2.077
	Staff familiarity with project management techniques	0.526	1.901
	Application of project management in the organization	0.619	1.615
A	Dependent Variable: Performance of DET project		

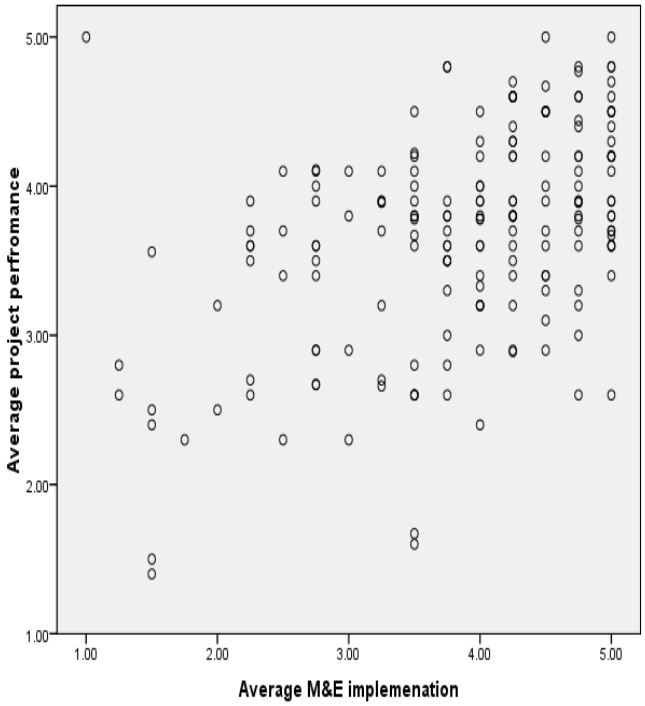
Appendix F: Linearity Tests

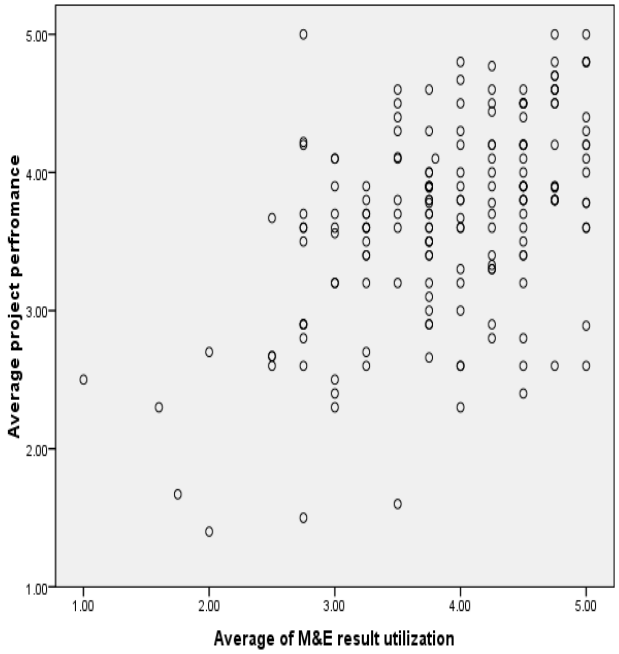









Average project perfromance
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Average M&E implemenation


Average project perfromance
5.00
4.00
3.00
2.00
1.00
1.00
2.00
3.00
4.00
5.00
Average of M&E result utilization

Appendix G: Planning for M&E and Performance of DET project

Regression:

Notes

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Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Planning for M&E[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.415[a]	.172	.168	.65055	1.567

a. Predictors: (Constant), Planning for M&E

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	16.020	1	16.020	37.852	.000[a]
	Residual	77.026	182	.423		
	Total	93.046	183			

a. Predictors: (Constant), Planning for M&E

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.387	.215		11.079	.000
	Planning for M&E	.337	.055	.415	6.152	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.9262	4.0726	3.6788	.29587	184
Residual	-2.21973	1.87152	.00000	.64877	184
Std. Predicted Value	-2.544	1.331	.000	1.000	184
Std. Residual	-3.412	2.877	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix H: Implementation of Monitoring and Evaluation and Performance of DET project

Regression

Notes

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Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Implementation of M&E[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.464[a]	.216	.211	.63325	1.791

a. Predictors: (Constant), Implementation of M&E

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.062	1	20.062	50.029	.000[a]
	Residual	72.984	182	.401		
	Total	93.046	183			

a. Predictors: (Constant), Implementation of M&E

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.361	.192		12.288	.000
	Implementation of M&E	.342	.048	.464	7.073	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.7024	4.0693	3.6788	.33110	184
Residual	-1.95670	2.29756	.00000	.63152	184
Std. Predicted Value	-2.949	1.179	.000	1.000	184
Std. Residual	-3.090	3.628	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix I: Dissemination of M&E Results and Performance of DET project

Regression

Notes

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Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Dissemination of M&E Results[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.367[a]	.135	.130	.66515	1.559

a. Predictors: (Constant), Dissemination of M&E Results

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.525	1	12.525	28.309	.000[a]
	Residual	80.521	182	.442		
	Total	93.046	183			

a. Predictors: (Constant), Dissemination of M&E Results

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.780	.176		15.798	.000
	Dissemination of M&E Results	.253	.048	.367	5.321	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.0329	4.0458	3.6788	.26161	184
Residual	-2.06594	1.96709	.00000	.66333	184
Std. Predicted Value	-2.469	1.403	.000	1.000	184
Std. Residual	-3.106	2.957	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix J: Utilization of M&E results and Performance of DET Project

Regression

Notes

Output Created		21-Oct-2018 12:40:53
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Input	Data	C:\Users\HP 15\Desktop\Latest 3.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	184
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT PerfDET /METHOD=ENTER AveMEutilization /RESIDUALS DURBIN.
Resources	Processor Time	00:00:00.157
	Elapsed Time	00:00:00.093
	Memory Required	2788 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP 15\Desktop\Latest 3.sav

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Utilization of M&E results[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.489[a]	.239	.235	.62360	1.688

a. Predictors: (Constant), Utilization of M&E results

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.270	1	22.270	57.266	.000[a]
	Residual	70.776	182	.389		
	Total	93.046	183			

a. Predictors: (Constant), Utilization of M&E results

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.944	.234		8.318	.000
	Utilization of M&E results	.445	.059	.489	7.567	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.3893	4.1686	3.6788	.34884	184
Residual	-1.90136	1.83227	.00000	.62190	184
Std. Predicted Value	-3.697	1.404	.000	1.000	184
Std. Residual	-3.049	2.938	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix K: Combined M&E processes and Performance of DET Project

Regression

Notes

Output Created		21-Oct-2018 12:41:44
Comments		
Input	Data	C:\Users\HP 15\Desktop\Latest 3.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	184
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT PerfDET /METHOD=ENTER OVeralME /RESIDUALS DURBIN.
Resources	Processor Time	00:00:00.078
	Elapsed Time	00:00:00.063
	Memory Required	2788 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP 15\Desktop\Latest 3.sav

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Combined M&E Processes[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.506[a]	.256	.252	.61688	1.683

a. Predictors: (Constant), Combined M&E Processes

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	23.788	1	23.788	62.511	.000[a]
	Residual	69.258	182	.381		
	Total	93.046	183			

a. Predictors: (Constant), Combined M&E Processes

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.931	.226		8.552	.000
	Combined M&E Processes	.464	.059	.506	7.906	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.5243	4.2499	3.6788	.36054	184
Residual	-2.03761	2.26229	.00000	.61519	184
Std. Predicted Value	-3.202	1.584	.000	1.000	184
Std. Residual	-3.303	3.667	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix L: Project Management Maturity and Performance of DET Project

Regression

Notes

Output Created		21-Oct-2018 12:42:54
Comments		
Input	Data	C:\Users\HP 15\Desktop\Latest 3.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	184
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT PerfDET /METHOD=ENTER OverMaturity /RESIDUALS DURBIN.
Resources	Processor Time	00:00:00.078
	Elapsed Time	00:00:00.047
	Memory Required	2788 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP 15\Desktop\Latest 3.sav

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Project Management Maturity[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.488[a]	.238	.234	.62409	1.698

a. Predictors: (Constant), Project Management Maturity

b. Dependent Variable: Performance of DET project

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22.158	1	22.158	56.890	.000[a]
	Residual	70.887	182	.389		
	Total	93.046	183			

a. Predictors: (Constant), Project Management Maturity

b. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.793	.254		7.055	.000
	Project Management Maturity	.618	.082	.488	7.543	.000

a. Dependent Variable: Performance of DET project

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.6707	4.2650	3.6788	.34797	184
Residual	-1.89677	1.97085	.00000	.62239	184
Std. Predicted Value	-2.897	1.685	.000	1.000	184
Std. Residual	-3.039	3.158	.000	.997	184

a. Dependent Variable: Performance of DET project

Appendix M: Project Management Maturity and the Relationship between M&E processes and Performance of DET project

Notes

Output Created		21-Oct-2018 13:25:49
Comments		
Input	Data	C:\Users\HP 15\Desktop\Latest 3.sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	184
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on cases with no missing values for any variable used.
Syntax		REGRESSION /MISSING LISTWISE /STATISTICS COEFF OUTS R ANOVA CHANGE /CRITERIA=PIN(.05) POUT(.10) /NOORIGIN /DEPENDENT PerfDET /METHOD=ENTER ZOVeralME /METHOD=ENTER ZOverMaturity /METHOD=ENTER Moderator /RESIDUALS DURBIN.
Resources	Processor Time	00:00:00.157
	Elapsed Time	00:00:00.094
	Memory Required	3468 bytes
	Additional Memory Required for Residual Plots	0 bytes

[DataSet1] C:\Users\HP 15\Desktop\Latest 3.sav

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Zscore: Monitoring and Evaluation Processes[a]	.	Enter
2	Zscore: Project Management Maturity[a]	.	Enter
3	Interaction Term[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Performance of DET project

Regression

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.506[a]	.256	.252	.61688	.256	62.511	1	182	.000	
2	.560[b]	.313	.306	.59408	.058	15.236	1	181	.000	
3	.579[c]	.336	.325	.58602	.022	6.011	1	180	.015	1.760

a. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes

b. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity

c. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity, Interaction Term

Model Summary[d]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.506[a]	.256	.252	.61688	.256	62.511	1	182	.000	
2	.560[b]	.313	.306	.59408	.058	15.236	1	181	.000	
3	.579[c]	.336	.325	.58602	.022	6.011	1	180	.015	1.760

a. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes

b. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity

d. Dependent Variable: Performance of DET project

ANOVA[d]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.788	1	23.788	62.511	.000[a]
	Residual	69.258	182	.381		
	Total	93.046	183			
2	Regression	29.165	2	14.583	41.318	.000[b]
	Residual	63.881	181	.353		
	Total	93.046	183			
3	Regression	31.229	3	10.410	30.312	.000[c]
	Residual	61.816	180	.343		
	Total	93.046	183			

a. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes

b. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity

c. Predictors: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity, Interaction Term

d. Dependent Variable: Performance of DET project

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.679	.045		80.894	.000
	Zscore: Monitoring and Evaluation Processes	.361	.046	.506	7.906	.000
2	(Constant)	3.679	.044		83.998	.000
	Zscore: Monitoring and Evaluation Processes	.240	.054	.336	4.456	.000
	Zscore: Project Management Maturity	.210	.054	.294	3.903	.000
3	(Constant)	3.730	.048		77.789	.000
	Zscore: Monitoring and Evaluation Processes	.223	.053	.312	4.165	.000
	Zscore: Project Management Maturity	.195	.053	.273	3.645	.000
	Interaction Term	-.089	.036	-.154	-2.452	.015

a. Dependent Variable: Performance of DET project

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	Zscore: Project Management Maturity	.294[a]	3.903	.000	.279	.667
	Interaction Term	-.181[a]	-2.802	.006	-.204	.946
2	Interaction Term	-.154[b]	-2.452	.015	-.180	.933

a. Predictors in the Model: (Constant), Zscore: Monitoring and Evaluation Processes

b. Predictors in the Model: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity

c. Dependent Variable: Performance of DET project

Excluded Variables[c]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics: Tolerance
1	Zscore: Project Management Maturity	.294[a]	3.903	.000	.279	.667
	Interaction Term	-.181[a]	-2.802	.006	-.204	.946
2	Interaction Term	-.154[b]	-2.452	.015	-.180	.933

a. Predictors in the Model: (Constant), Zscore: Monitoring and Evaluation Processes

b. Predictors in the Model: (Constant), Zscore: Monitoring and Evaluation Processes, Zscore: Project Management Maturity

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.7560	4.1731	3.6788	.41310	184
Residual	-1.87844	1.56456	.00000	.58120	184
Std. Predicted Value	-4.655	1.197	.000	1.000	184
Std. Residual	-3.205	2.670	.000	.992	184

a. Dependent Variable: Performance of DET project