INFLUENCE OF PROJECT MANAGEMENT INFORMATION SYSTEMS ATTRIBUTES ON PROJECT PERFORMANCE: A CASE OF YOUTH POLYTECHNIC DEVELOPMENT PROJECTS IN EMBU COUNTY, KENYA

BY

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DECLARATION

This research project report is my original work and has not been presented for a degree or other award in any other University.

Signature:…….Date…….

Catherine Wanjiru Ngari

L50/83800/2016

This research project proposal has been submitted for examination with my approval as University Supervisor.

Signature:……Date:……..

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DEDICATION

This research project report is dedicated to my beloved husband Hilary Njiru and my daughter Christine Mukami for their prayers and moral support during this study.

In addition, I wish to dedicate this work to my father Esbon Ngari and mother Penninah Ngari who despite their lack of education inspired me to seek more knowledge with excellence and managed to mobilize their minimal resources to take me to school.

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ABBREVIATIONS AND ACRONYMS

ASP:	application service provider
BIS:	Business Intelligent Systems
CPM:	Critical Path Method
DSS:	Systems Decision Support Systems
EDM:	Electronic Document Management
ENR:	Engineering New Record
ERP:	Enterprise Resource Planning
ESS:	Executive Support
IS:	Information System
ISSM:	Information System Success Model
IT:	Information Technology
KMS:	Knowledge Management System
MIS:	Management Information Systems
PERT:	Programme Evaluation Review Technique
PMBOK:	Project Management Body of Knowledge
PMI:	The Project Management Institute
PMIS:	Project Management Information Systems
R&D:	Research and Development
RM:	risk management.
SPSS:	Statistical Package for Social Sciences
SCM:	Supply Chain Management
TAM:	Technology Acceptance Model
VR:	virtual reality
WBS:	Work Breakdown Structure

ABSTRACT

Organizational performance is one of the most imperative constructs in management research. Development projects are generally recognized as successful when they are finished on time, within budget, and in harmony with specifications and to stakeholders' satisfaction. Many of the projects exceed the original cost; get cancelled prior to completion, while others fail in terms of the delivered functionality. While a lot of time and resources are dedicated to selecting and designing projects, it remains of vital significance that projects be adequately managed in organizations so that they can achieve their performance objectives. The purpose of the study was to establish the influence of Project Management Information System attributes on project performance in the youth polytechnics; a case of Embu County, Kenya. The Objectives of this study was to determine the influence of PMIS system software on performance of polytechnic development projects, to establish the influence of quality information generated by PMIS on performance of polytechnic development projects, to assess the influence of PMIS user on performance of polytechnic development projects and to determine the influence of PMIS use on performance of polytechnic development projects. Descriptive survey research design was used to enable the researcher obtain the opinions of project managers in their natural setting. The study used a sample of 10 managers derived from a target population of 32, 43 instructors derived from a target population of 143 and 27 support staff derived from a target population of 90. Simple Random sampling technique was used to select the samples from the target population. Questionnaires were used to collect Data. Data was analyzed by use of descriptive statistics; frequency tables mean. Cronach's alpha test was used in assessing reliability of research instrument which was 0**.**917. Hence the instrument was reliable. Descriptive statistics and Correlation (using the Pearson's coefficient of correlation) was used to establish the relationship between the dependent variables and the set of independent variables at 5% level of confidence using the SPSS version 20 software. The research found out that the use of the software to generate quality information needed by the user (project manager) to perform project tasks helped the project managers perform their tasks in a more professional manner thus increasing the probability of the project success. The quality of the system software has a major impact on the acceptance of the system, its effect on the efficiency and effectiveness of the performance in organizations. The quality of information is directly and strongly related to project management information system use and to the system's impacts on the project manager. The system's ease of use, accessibility, learn capability and flexibility play an important role in producing relevant, accurate and secure information as perceived by the development project manager for the success of the development projects. The use of various function tools i.e. planning, monitoring, Evaluation and reporting tools had led to improving the probability of project performance due to the quality of information generated by the PMIS. All the independent variables had a significant relationship to the dependent variable, because the p-value in all the relationships was 0.000 which is less than the alpha value (level of significance) 0.01. It was therefore concluded that it is not the complexity of the software that matters but the relevance of the information generated and the ability of the user to use the information to manage the project. It was recommended that Youth polytechnics should adopt the use of Project Management Information System in the management of their development projects. This is because they generate relevant, accurate and secure information needed for the effective and efficient management of the projects and decision making. Future researchers could evaluate the effects of the use of Project Management Information Systems in decision making in a multi-project environment.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

In the project management literature, the definition of project has been discussed by numerous literatures, for instance, Project Management Institute (2008) define projects as a short-term endeavor undertaken to create a unique product or service. Cleland (2004) describe a project as a combination of organizational resources pulled together to create something that did not previously exist and that will provide a performance capability in the design and execution of organizational strategies. Some authors describe Project Management information systems as software for project management (Fox, Murray et al., 2003), while others view them as orderly procedures or practices that project managers use for producing specific project management deliverables Milosevic (2003).

Besner (2009) declared that projects are most frequently used in information technology (IT), software development, business process reorganization and research and development. The task of Project Management Information System has been described as important to the achievement of project goals and the implementation of project strategies. PMIS supplies project managers with essential information on the cost parameter, time parameter and performance parameter of a project and on the interrelationship of these parameters (Raymond, 1987). In the information technology (IT) industry, Gartner Research estimates that 75% of large IT projects managed with the support of a project management information systems will succeed, while 75% of projects without such support projects will fail (Light, et.al., 2005).

In organizations that are engaged in many projects, management is faced with challenges in resource planning, prioritization and monitoring (Elonen & Artto, 2003). Inadequate balancing of scarce resources challenge repeatedly results in additional pressure on the organization. These pressures lead to poor quality of information and a greater time to complete the project. Managers may become overwhelmed by the amount of information that is available for decision making and may not be able to identify the relevant information or realize the inaccuracy of the information. Use of Project Management Information Systems (PMIS) is considered to be beneficial to project managers because of the supposed contribution regarding timelier decision making and project success (Raymond & Bergeron, 2008). Studies on the use of PMIS in single projects show that there are several important

factors that drive project managers to use PMIS (Ali & Money, 2005). Whether or not project managers will use PMIS strongly depends on the quality of the information generated by the PMIS (Ali & Money, 2005).

However, literature still shows that researches on the utilization of Project Management Information System that highlight the demographics of project management tools and, to assessing particular functions of these tools to maintain a particular tasks during project management life cycle such as planning, communicating and reporting, managing risks, scheduling, estimating costs, and managing documents needs further research (Herroelen, 2005; Love and Irani (2003). According to Ahleman (2009) Project Management Information Systems have become inclusive systems that support the project's entire life-cycle. To support project managers in their planning, organizing, control, reporting and decision making tasks on the one hand and evaluating and reporting, it seems to be essential to make use of PMIS (project management information system). As part of the project management system, the PMIS (project management information system) are a means for the project managers to be supported in their decision making. The function of the PMIS can be seen as the link between the multi project environment and the project managers that is capturing, storing and processing project data to assist the project managers in their decision making responsibilities (Raymond, 1987).

Ali, Anbari, and Money (2008) argue that Information systems are developed using Information technology to assist people in performing their tasks. Project Management Information System is an example of these Information Systems and is widely regarded as an important building block in project management. These systems have continued to evolve from just being planning, scheduling and resource management information systems to complex, distributed, multi-functional systems that can easily generate information necessary to make decisions, improve the efficiency of implementation among other functions within life cycle of the project. What sets Project Management Information System apart from other classes of information system is the volatility nature of their usage, context that is project environments, and as such they need to be more customizable in their functionality than most other enterprise information systems (Ali et al, 2008).

The rate of information systems development project failure in the 1980s and 1990s was routinely documented to be above 50%, the larger the development project the more likely it was unsuccessful (Simpl & Nzier, 2000). A 1994 study of IS development projects in British

public sector estimated that 20% of expenditure were wasted, and a further 30% to 40% did not produce perceivable benefits (Wilcocks, 1994). Also in 1994, the U.S.A. general accounting office reported that spending of more than US$200 billion in the previous twelve years had led to few meaningful returns. A 1995 study of over 8,000 Information systems projects by Johnson revealed that only 16% were finished on time and within budget (Johnson, 1995).

The U.S.A. internal revenue service, with an annual computer budget of US$8 billion, managed a string of project failures that have cost taxpayers $50 billion a year (James, 1999). Collins and Bicknell (1997) estimated that public sector failures in the United Kingdom cost £5 billion. The Wessex Health Authority's regional information systems plan was cancelled after more than £43 billion had already been spent, with little achieved (Collins et al, 1997). A study by Simpl & Nzier (2000) found that the success rate was only 55% for projects under US$750,000; however, for those with budgets over US$10 million, no projects were successful. In 2002, the United Kingdom's National Health Service initiated the largest-ever public sector project at an estimated cost of £11 billion. This led to the introduction of new information systems in almost every hospital, but it was still considered a failure (Rainer & Turban, 2009).

The success of the management information systems can be achieved by analyzing its effect on results. Various authors consent with this concept and directly affirm that the goal of management information systems should be to obtain an improvement and enhancement in the firm's performance. According to a study conducted by (Naranjo-Gil 2009), Management information system has an influence on flexibility-based strategic performance and cost-based strategic performance, considering the decentralization of responsibilities, updating customer knowledge and customer participation in management, the cooperation with other units with the scope of increasing the firm budget, actualization and use of management information (Slotegraaf & Pauwels, 2008). Greater management information system capability leads to a higher degree of project performance.

According to Lai et al (2004) a link was established between sharing environmental management information with customers and suppliers and the overall comprehensive firm performance. PMIS enhances the quality of organizations by providing appropriate information for quality decision making. Due to the expansion and complexity of organizations, managers have lost personal contact with the scene of operations. PMIS also

changes the bigger amount of data into compiled form and thereby avoids the possible ambiguity that may arise when managers are swamped with detailed facts. MIS is successfully used for measuring organizational performance and making a necessary change in its plans and procedures (Pfeffer and Sutton, 2000). MIS links all decision centers in the organization, by facilitating the integration of specialized activities by retaining each department conscious of the requirements and issues of other departments. Jorgenson (1989).

Management information system serves as a connection between managerial planning and control and assembles, processes, stores, retrieves, evaluates and distributes the information. It improves the capacity of management to analyze, assess and improve comprehensive organization performance. PMISs have capabilities that help project managers in planning, budgeting and resource allocation. In addition, many PMISs perform assorted analyses like variance, performance, and forecasting for any level of the WBS and project organization. A good PMIS (project management information system) allows facile control of changes to system configuration and project plans. These PMISs allow for quick review and easy periodic updating; they filter and reduce data to provide information on summary, exception, or what if bases. With an effective PMIS (project management information system) the project manager need not wait for days or peruse through reams of data to identify problems and determine project status (Slotegraaf & Pauwels, 2008).

March and Sutton (1997) found that of 439 articles in the Strategic Management Journal, the Academy of Management Journal and Administrative Science Quarterly over a period of three years, 23% included some measure of performance as a dependent variable. Not only does the use of these systems give the firms competitive edge against their competitors but also enhances the effectiveness of development projects throughout their life cycle. According to (Kaiser et al, (2010) the use of Project Management Information System is based on the belief that their cost will be offset by the benefits that come along with it. The broadening of Project Management Information System scope assists organizations to not only manages individual projects but the whole project portfolios.

Organizational effectiveness is a broader construct that captures organizational performance, but with grounding in organizational theory that entertains alternate performance goals (Cameron & Whetten 1983). Management research in general, and research on strategic management more specifically, has taken a much more limited empirical view, emphasizing the major role of accounting, financial and stock-market outcomes. A project, in project

management literature is defined as a special task that has not been done before and that achieves a clear objective against a time scale (Atkinson, 1999; Dvir, Raz, & Shenhar, 2003). Because it is very difficult to know exactly the scope as well as the complexity of all the activities that require to be carried out to complete the project at the start of a project, it is suggested that project management is a combination of management and planning and the management of change (Atkinson, 1999).

According to Ahleman (2009) "Project management covers all project management processes that are related to planning, controlling, and coordinating projects". Project management is definitely not easy in regards to the complexity, uncertainties and large number of activities involved, even in a single project environment (Mota, de Almeida, & Alencar, 2009). In a multi project environment it is common that one project manager leads multiple concurrent projects (Patanakul & Milosevic, 2008a). This implies that multi project managers have to deal with several projects at the same time. In order to be successful, multi project managers must possess more competencies for example organizational experience, Inter dependency management, multitasking, simultaneous team management, and management of inter project process and utilize them more intensely and more dynamically compared to single project managers (Patanakul & Milosevic, 2008b).

1.2 Statement of the problem

Development projects are commonly recognized as successful when they are concluded on time, within budget, and in line with specifications and to stakeholders' satisfaction. Many of projects exceed the original cost; get cancelled prior to completion, while others fail on terms of the delivered functionality. Whereas huge amounts of time and resources are devoted to selecting and designing projects, it remains of supreme importance that projects be effectively managed in organizations if they are to achieve their performance objectives. A project manager simply cannot make and execute meaningful decisions without relevant and timely information (Cleland, 2004b).

Projects have to be managed, that is, they require to be planned, staffed, organized, monitored, controlled, and evaluated (Liberatore 2004). To succeed, companies must deliver projects on time, within budget and meet specifications while managing project risks. Peters (1982) identified that project management has long been considered an important characteristic of successful companies and is more than ever necessary to efficiently and

effectively manage these projects and to support project managers in their decision-making. Cleland (2004b) states that project managers necessitate accurate and timely information for the management of a project.

Project planning, organizational design, motivation of project stakeholders, and meaningful project reviews simply cannot be carried out without information on the project together with how it relates to the larger organizational context in which the project is found (Cleland 2004b). For instance, according to Uket Ewa (2013) on Root Causes of Project Abandonment in Tertiary Institutions in Nigeria found that the lack of articulated vision and objectives, lack of adequate planning for the project at inception, lack of adequate funds and budgetary allocation before projects are embarked upon, Inefficient and effective legal system, poor contract documentation, corruption and compromises, lack of municipal services, non release of government white papers on investigations carried out on abandonment of projects, lack of true leadership, lack of continuity and Institutions' long term strategic plans to drive the Institutions, ambiguity in contract documentations as the major causes of white elephants projects in tertiary institutions. However, with Project Management Information System being increasingly utilized by project managers in all types of industry, not much is known on the attributes of these systems that add to project performance. The commencement of the 21st century has shown little improvement in information systems development projects performance. Thus the intention of this study is to investigate the influence of Project Management Information System attributes on project performance of Youth polytechnic development projects in Embu County, Kenya with regard to the System, quality of information, the System user and the System use during the entire project life cycle to increase project performance rate.

1.3 Purpose of the Study

The study sought to investigate the influence of Project Management Information System attributes on project performance of Youth polytechnic development projects in Embu County, Kenya.

1.4 Objectives of the Study

This study was guided by the following research objectives

i. To determine the influence of PMIS system software and performance of polytechnic development projects in Embu County Kenya;

ii. To establish the influence of quality information generated by PMIS and performance of polytechnic development projects in Embu County Kenya;
iii. To assess the influence Project Management Information System user satisfaction and performance of polytechnic development projects in Embu County Kenya;
iv. To determine the influence of Project Management Information System use by the manager and performance of polytechnic development projects in Embu County Kenya.

1.5 Research Questions

This study was guided by the following research questions

i. How does the Project Management Information System software affect performance of polytechnics developments projects?
ii. To what extent does the quality of information generated by the PMIS influence the performance of polytechnic development projects?
iii. In what ways does the Project Management Information System user satisfaction influence performance of polytechnic development projects?
iv. To what extent does the Project Management Information System use influence the performance of polytechnic development projects?

1.6 Significance of the Study

It is hoped that this study contributed to the existing body of knowledge to researchers and academicians seeking secondary data on the influence of Project Management Information System attributes on project performance. It is also hoped that it contributed to the wider global debate on the impact of information technology on management of development projects in education sector. It is also hoped that its findings and recommendations informed current practices and the relevant bodies like the ministry of education, National Industrial training authority and Kenya national examination Council on actions that have to be taken in order to get better performance rate of development projects.

1.7 Delimitation of the Study

The study was delimited to the geographical boundaries of Embu County, Kenya. It was also delimited to the Project Managers, support staff and instructors working in these Youth polytechnics in Embu County, Kenya. The study was also focused on the variables under study, i.e. the System, information quality, the system user and the system use.

1.8 Limitations of the Study

Time was a main challenge of the study, getting access and appointments to the respondents will be difficult since they might not be having time to fill in the questionnaires due to their busy office schedules. The researcher overcame this by booking appointments with the respondents in advance before distributing the questionnaires as well as agreeing with them on the best time to get back the questionnaire. Transport was another challenge that was encountered, getting around the county and distributing the questionnaires on time was quite difficult. The researcher overcame this by engaging the services of two assistants who helped in distributing the questionnaire to the relevant people. Financial constraints were also a challenge, the researcher dealt with this by getting financial assistance from family and friends.

1.9 Assumptions of the Study

The researcher assumed that respondents were available and willing to fill in questionnaires. The researcher also assumed that questionnaires were filled truthfully and returned on time. The researcher also assumed that funds required for the research were available on time. The researcher further assumed that access to relevant research data throughout the study was granted on time.

Definitions of Significant Terms

Project Management Information System: (PMIS) are system tools and techniques used in project management to deliver information. Project managers use the techniques and tools′ to collect, combine and distribute information through electronic and manual means.

Project Management Information System use: This refers to the extent to which various system functions and their associated tools are used by the project manager.

Project Management Information System User: this is a person who interacts with a system, typically through an interface, to extract some functional benefit. User-centered design, often associated with human computer interaction, considers a wide range of generic systems. In this case this refers to the project manager of the respective polytechnics.

Project performance: It refers to project achievements and in particular on the successful accomplishment of the project with regards to cost, time and quality.

The System: It refers to interrelated components; with an identifiable boundary and which collectively accomplish certain objectives.

Quality Information: this is the desirable characteristics of the system outputs. For example relevance, understandability, accuracy, conciseness, completeness, currency, timeliness, usability

Configuration management: This is an approach for tracking all approved changes, versions of project plans, blueprints, software numbering, and sequencing.

1.10 Organization of the Study

The project proposal is organized into five chapters: chapter one presents: the concept of project management information system background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, delimitation, limitation, assumptions, definition of significant terms and organization of the study. Chapter two presents literature review in relation to the themes of the study, theoretical framework, conceptual framework, knowledge gap and summary of the related reviews. Chapter three presents research methodology that consists of; research design, target population, sample size and selection and data collection instruments. Chapter four consists of presentation of the collected data, data analysis and interpretation of the findings. Chapter five presents the discussion of key findings, conclusion drawn from the findings, recommendation and areas of further research.

CHAPTER TWO:LITERATURE REVIEW

2.1 Introduction

Reviewed literature was organized according to the themes of the study. It also looked at theoretical framework and the conceptual framework of the study. It further looked at the operational variables that were used in the study.

2.2 PMIS system software and performance of polytechnic development projects

The nature of information systems has changed considerably during the last decade; they are, still developing from single-user/single-project management systems to complex, distributed, multi-functional systems that no longer only cover project planning (scheduling and resource management) (Ahleman, 2006). Interdependence between information technologies and project management has reached its highest level. It is perceptible in the increase number of project management packages and the adoption of various management solutions such as Executive Support Systems (ESS), Decision Support Systems (DSS), Knowledge Management System (KMS), Management Information Systems (MIS), Supply Chain Management (SCM), Business Intelligent Systems (BIS), virtual reality (VR), and risk management (RM) tools.

A number of organizations and technical forces are changing the fundamentals of project management. Advanced Information and Communication Technologies (ICT) enable cooperation in a distributed mode. Technologies like groupware and video conferencing are increasingly becoming feasible for organizations to use in international projects (Manheim, 1993). Globalization of markets and competition necessitate integration of global managerial and business processes in corporations (Nohria, 1997). This corporate integration is achieved by people working from geographically distributed sites in a given project (Hamlin, 1994). Corporations expect organizational teams to cooperate on an international scale, dealing with business problems with a global impact. Organizations are more and more adopting a strategy of global sourcing, not only in innovative sectors like microelectronics and the semi-conductor industry, but also in financial and business services as well as educational sector, manufacturing and engineering operations. These strategies require intensive cooperation between the organizations involved in these exchanges, projects including professionals from multiple organizations will occur (Bergestrom, 1996).

Co-operation from distributed sites around the world enables organizations to benefit from differences of time zones between locations. Improvement of project cycle time becomes feasible in such a distributed environment. Multinationals increasingly organize their Research and Development (R&D) activities around globally distributed centers of excellence (Chiesa, 1995 & Kuemmerle, 1997). Coordination of activities between these centers and integration with business operations require close cooperation of professionals. Thus, multinational organizations tap into local sources of competence and leverage this knowledge on a universal scale (Grant, 1996). Globally distributed projects enable recognition of these benefits and increase corporate performance. The confluence of these trends has given rise to new forms of organizations which, enabled by advanced Information Communication Technology (ICT), are labeled `virtual organizations' (Ciborra, 1996 & Fulk, 1995).

Project Management Information System in development projects can be largely categorized into three types of information systems: those that are self-developed and used in institutions; systems based on a widely distributed application service provider (ASP); and specialized systems used in specific capital projects (Moon, 2003). The education sector is characterized by fragmentation which exists both within individual phases as well as across project phases (Howard et.al, 1989). Because of this fragmentation, participants from various organizations who are involved in different project phases are facing ineffectiveness and inefficiency in their coordination, collaboration and communication processes. As a tool to reduce the problems generated by this fragmentation, Information Technology (IT) is routinely and widely used in the education sector. Powerful project management software has become a prerequisite to manage the projects more efficiently and effectively, and aid the project managers in their decision-making (Havelka et.al, 2006). The advantage of an information system is that it helps to promote productivity by effectively processing and providing necessary information to an organization and supporting their efficient work performance.

The importance of information system has been emphasized for enhancing communication, and the efficient management of development information has been emerging as an element that determines the success of a project that involves many stakeholders (Lee et.al, 2010). Thus, in development projects, various types of Information Systems, such as development management or business software, have been developed, applied, and widely used; in particular, project management information system is extensively utilized due to its numerous

advantages (Yoon et.al, 2006). The information requirements for all stakeholders drive the design and development of the Project Management Information System's contents and requirements. The project manager and project team will be the primary users of the system, but it will need to consider stakeholders such as senior management, customers, and functional managers. It provides the framework for collecting information needed to manage the project (plan, organize, evaluate, and control the use of resources on the project), organizing project background information and interface with larger organizational information systems to permit smooth, efficient interchange of information in support of organizational and project objectives and goals, storing and processing project information (Thomsen, 2011).

Project Management Information System serves an important purpose in tracking at the work package level early identification of schedule slippage or significant cost overruns on detailed work areas. Early identification of small problems permits the attention to detail before there are major impacts on higher-order work. This is especially important on large projects or projects that have a very rigorous schedule to meet the enterprise's or customer's goals. The system in place should be prospective and capable of providing intelligence on both the current and probable future progress and status of the project (Thomsen, 2011). An effective system provides the information that demonstrates when the project is on track or when it has exceeded the allowable limits of performance, hence it should be able to track the progress of: Tasks, Durations, Costs, committed or spend, and Resources. PERT analysis allows the user to see the effects of various scenarios in a project to aid project managers in their decision making process. Clements (2006), states that conducting a PERT analysis without the Project Management Information System software is extremely time-consuming. The system helps the project manager to prepare and plan for certain contingencies and to assess consequences (Clements, 2006).

The project management system consists of three parts: the project managers, the Project Management Information Systems and the project life cycles in a multi project environment. The project life cycles consist of various evolving stages; objectives, plans, concepts, solutions, specifications and resources and contains all information needed to support project managers in their planning, organizing, control, reporting and decision making tasks. The role of the Project Management Information Systems can be seen as the link between the multi project environment and the project managers. This role includes capturing, storing and

processing project data to assist the project managers in their decision making tasks (Raymond, 1987).

Information systems are developed using Information technology to assist people in performing their tasks. Project Management Information System is an example of these Information Systems and is widely regarded as an important building block in project management. These systems have continued to evolve from just being planning, scheduling and resource management information systems to complex, distributed, multi-functional systems that can easily generate information necessary to make decisions, improve the efficiency of implementation among other functions within the project life cycle. What sets Project Management Information System apart from other classes of information system is the highly volatile nature of their usage context that is project environments, and as such they need to be more customizable in their functionality than most other enterprise information systems (Ali et al, 2008).

Notwithstanding the theoretical and practical importance of Project Management Information System to the project management field, there have been as of yet few studies on the actual use and impacts of these systems, thus highlighting the need to extend project management theory in relation to the developing practice in this regard (van der Heijden, 2004). Empirical studies of Project Management Information System have been mostly limited to describing the demographics of project management software usage and to evaluating specific applications of these systems or software modules to support project management tasks such as planning, communicating and reporting, managing risks, scheduling, estimating costs, and managing documents. (Kanaracus, 2008).

Project management software usage has also been found to have many drawbacks and limitations, both in theory when compared to an ideal Project Management Information System by researchers and in practice as perceived by project managers. An IS-based conceptualization and definition of project management software facilitates the import of knowledge from the Information Systems field or discipline, knowledge that can provide a deeper understanding of the Project Management Information System usage phenomenon and help in answering questions on the factors that explain the use and non-use of Project Management Information System, and on the actual impacts of these systems on project managers and project performance (European Journal of Information Systems (2008).

2.3 Quality Information Generated and Performance Of Polytechnic Development Projects

Information quality is the desirable characteristics of the system outputs. The output of the information systems should to be relevant to the purpose, for which it is required, easy to understand, accurate or less error, concise, complete or contains all the required information, quick availability and timely to support information needs, and usability. According to AlMamary et al (2014), a number of researchers consider information quality as important factor to MIS success in organization

The quality of information that has been used to make decision among other things in a project can greatly affect the outcome of the project. If inadequate information is generated it will lead to wrong decisions being made and consequently negatively affect the outcome of the project. Project Management Information System should provide project team members with useful information that can be used in decision making by storing, keeping, processing and managing the information resources (Lee et al. 2011). According to Swanson (1974, cited in Lee et al, 2011) the quality of information generated by the Project Management Information System determines the quality of the system. Zmud (1979, cited in Lee et al., 2011) insists that accuracy and timeliness of the information are critical determinants of information quality.

Kim (2007, cited in Lee et al, 2011) concludes important factors that determine the quality of information include ability to understand, accuracy, availability, precise, conciseness, consistency, interpretation and fidelity. Managers can be overwhelmed by the amount of information available for decision making which may lead to them being unaware of inaccuracies or losing sight of relevant information thus leading to poor decision making. The use of Project Management Information System is advantageous since it provides relevant and correct information that may be required in the day to day running of a project.

Information provides the intelligence for managing a project. Information must be processed so that decisions can be made and executed with a high degree of assurance so that the results will contribute to the project's performance. In the project planning role, information provides the basis for generating project action plans, schedules, network diagrams, projections, and other elements of planning. Information is essential to promote understanding; establish project objectives, goals, and strategies; develop mechanisms for controls; communicate status; forecast future performance and resources; recognize changes;

and reinforce project strategies. Matthew argues the project planning function establishes a structure and a methodology for managing the information resources, which encompass defining, structuring, and organizing project information, anticipating its flow, reviewing information quality, controlling its use and source, and providing a focal point for the projects' information policies (Matthews, 2004). According to the study done by Son, Hwang, Kim, et al. (2016). on the effects of PMIS quality and computer self-efficacy it revealed that development project professionals' perceived benefits are determined by behavioral intention to use and user satisfaction.

2.4 PMIS user satisfaction and performance of polytechnic development projects

Organizational performance is accumulated end results of all the organization's work processes and activities. The common measures for organizational performance are organizational productivity and organizational effectiveness. Organizational productivity is a measure of how efficiently employees do their work. Organizational effectiveness is measure of how appropriate Organizational goals are and how well an organization is achieving those goals. There are a lot of measures for the organizational impact and these measures differ from one researcher to another. User satisfaction is "the result of the individual taking outcomes that have been received and evaluating them on a pleasant-unpleasant continuum" (Seddon & Kiew, 1994). According to (DeLone & McLean, 2003; Raymond & Bergeron, 2008; Seddon & Kiew, 1994) relevance, accuracy, availability, reliability, consistency and timeliness are factors related to information quality.

Ali and Money (2005) found several studies that used these factors to measure the degree of user satisfaction with a given system's performance and concluded that the information quality has the greatest total effect on the use of project management software. This suggests that project managers are more eager to accept Project Management Information System on the basis of the quality of the information output and that they are more likely to use software that provides them with an appropriate level of details that fits their work needs, is free of complexity, and is easy to understand and communicate with the project team. Seddon and Kiew (1994) also found indications in literature that information quality is an important determinant of satisfaction. According to (Raymond and Bergeron, 2008) quality of information output has a positive impact on the project manager, since the project manager will feel more professional at work if he or she has access to project information of high quality and uses the system more intensively and more extensively. Further, user satisfaction

is not restricted to individual satisfaction but positively affects the intention of Project Management Information System use, through which PMIS use is expanded and sharing of information is facilitated within an organization; user satisfaction acts as a premise for efficient and effective development projects management.

DeLone and McLean (2003) showed that user satisfaction is one of the most widely used success measures of an information system's success. One of the major purposes of Project Management Information System is the smooth sharing of information among project stakeholders and therefore, when the use of the system is expanded among them, and not restricted to individual users, the effects become greater. In other words, positive effects of improved quality of Project Management Information System should lead to intention of use, not limited to satisfaction with its use, thereby expanding its use; then, smooth information sharing and systematic information management would be enabled, thereby enhancing efficient and effective development projects management. Behavioral intention is a measure of the strength of one's intention to perform a specified behavior (Fishbein, 1975).

Studies on the use of Project Management Information System in single projects show that there are several important factors that drive project managers to use Project Management Information System. First, whether or not project managers will use Project Management Information System strongly depends on the quality of the information generated by the Project Management Information System. Second, project managers are more eager to use an information system if it provides them with the appropriate level of details in relation to their need in work. Third, it is important that the generated information is free of complexity, easy to understand and easy for project managers to communicate with the project team(s). Fourth, when project managers have to deal with large and complex projects they tend to use Project Management Information System to make it easier to cope with the difficulty in work and control of project progress (Ali & Money, 2005). Project managers who deal with less complex projects may not be willing to use PMIS because the time they have to invest in keeping the system up to date may exceed the benefits gained from utilizing the system (Bendoly & Swink, 2007).

A study done by Mburungu,Mulwa and Kyalo (2016), on implementation of organizational staff capacity on implementation of electronic project monitoring information system in public tertiary institutions in Kenya. The study used 210 staff, data was collected using questionnaires. Stepwise regression revealed that staff capacity had a statistically significant

influence on implementation on electronic project management information system (EPROMIS).

2.5 PMIS Use On Performance Of Polytechnic Development Projects

According to Caldwell (2004), suggests that a Project Management Information System does not necessarily mean a state-of-the-art technology tool that provides features for every project because every project has different information needs both in quality and in quantity. Every project requires different levels of technologies to satisfy its basic information management needs, a small project with small needs will suffice with simple technologies, but large projects with large information needs can benefit from more extensive technological solutions (Caldwell, 2004). It is very advantageous to use a specialized Project Management Information System for it provides the project team and manager to use to correct amount and thus quality information.

The use of Project Management Information System in this study were measured by determining extent to which planning, monitoring, controlling, evaluating and reporting function tools were used by the project managers. One of the major purposes of Project Management Information System is the smooth sharing of information among project stakeholders and therefore, when the use of Project Management Information System is expanded among them, and not restricted to individual users, the effects become greater. In other words, positive effects of improved quality of Project Management Information System should lead to intention of use, not limited to satisfaction with its use, thereby expanding its use; then, smooth information sharing and systematic information management would be enabled, thereby enhancing efficient and effective development projects management (Caruan, (2002).

2.6 Theoretical framework

This study is based on the concept of information system (IS) success which is widely accepted for the evaluation of information systems (Yuan et.al, 2006). In management information systems (MIS) scholarship, a wide range of research has proposed IS success models (Delone et.al, 1992 and Raymond et.al, 2008). Various studies have been carried out in which the success factors of the models are applied to the evaluation of IS success or performance.

2.6.1 DeLone and McLean Information Success Model (ISSM) (1992)

Delone and Mclean performed a review of the research published during the period 1981–1987, and created taxonomy of IS success based upon this review. In their 1992 paper, they identified six variables or components of IS success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact (Petter et al, 1992). DeLone and McLean's model present different features differentiated by the two essential concepts that is system software quality and information quality.

DeLone and McLean (1992), introduced the first IS success model which was based on Shannon and Weaver's (1949) theory of communication. The utilizing of the system has a clear impact on the way individuals accomplish their performance. This impact may eventually effect on the organizational performance. It was among the first studies to impose some order in IS researchers' choices of success measures (Seddon et al, 1999). The model is based on theoretical and empirical research conducted by a number of researchers in the 1970's and 1980's. To construct the model, DeLone and McLean reviewed 100 papers containing empirical IS success measures published in seven publications during 1981-1987. They distilled the resulting huge range of Information system success measures into an integrated view of IS success, represented by the following the six dimensions: System Quality, Information Quality, Information Use, User Satisfaction, Individual Impact and Organizational Impact.

While the model integrates the comprehensive dependent variables used by IS researchers, it received several criticisms. Ten years later, DeLone and McLean presented an updated model reflecting the criticisms by other researchers and the situation at the time. As the service concept was added to IT with the use of the Internet, they increased the number of information system success factors to seven, including service quality, and analyzed the interdependence and correlation of these seven factors. Figure 2 represents the updated ISSM model of Delone and McLean (2003)

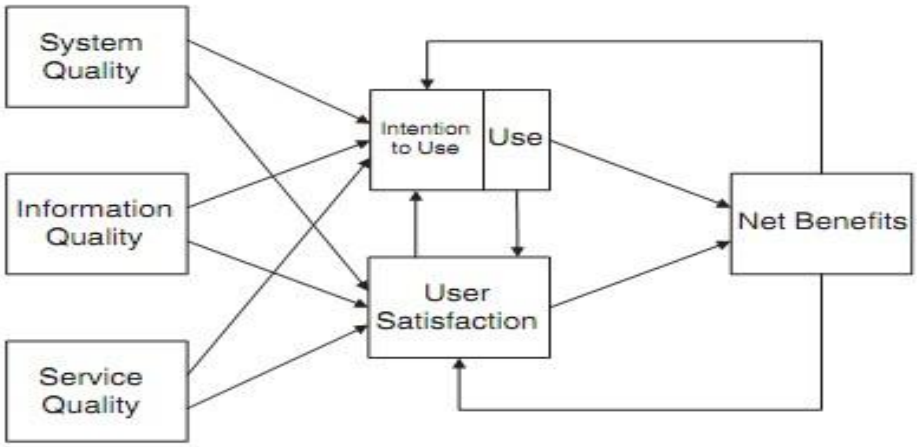

Figure1:The Updated Information System Success Model (ISSM) (DeLone, McLean 2003)

2.6.2 Technology acceptance model (TAM) (Davis et al, 1989)

Several studies of IS success models in the field of development projects have been carried out the technology acceptance model (TAM), (Chung et al, 2009) attempted to determine the elements of the success or failure of the introduction of enterprise resource planning (ERP) systems that are widely utilized in development projects with the purpose of contributing to assessing, planning, and conducting a project for introducing and establishing an ERP in an enterprise.

In the research, the success factors of the ERP system are divided into two categories; the first category is user-related variables, including output, job relevance, image and result, demonstrability, compatibility, and system reliability. The second category is project-related variables, including internal support, function, and consultant support. It can be said that this research has a high level of completion in that it suggested a success model for development projects ERP systems through extensive data collection and empirical analysis. Nevertheless, the success model suggested has limitations in its application to other types of IS because it was verified by focusing on ERP systems. Hjelt (2007) analyzed factors related to end-users' attitudes toward Electronic Document Management (EDM) systems that are used for large-scale development projects. The research conducted a survey to draw factors that affect acceptance of an EDM system to a development project.

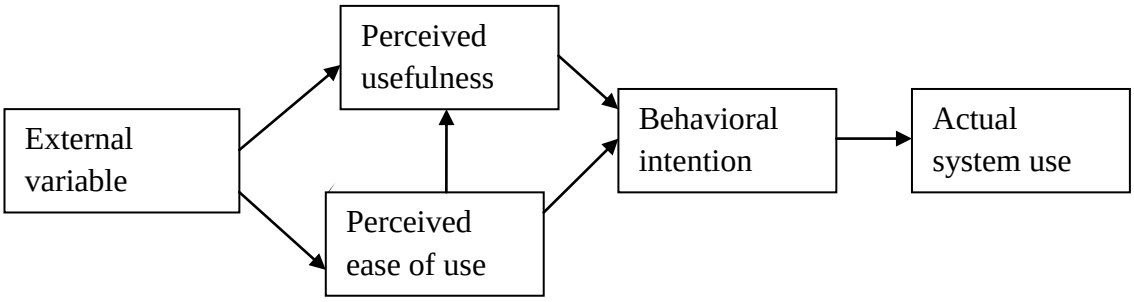

Figure2: Technology Acceptance Model (TAM) (Davis, Bagozzis and Warshaw 1989)

This study was founded on the recurrent constructs of antecedents and consequences of IS use developed in DeLone and McLean's IS success model (ISSM) (1992), later updated (2003), and in Davis et al (1989) technology acceptance model (TAM). The ISSM incorporates information quality and system quality as antecedents of IS use, leading to individual IS impacts, that is, on users and their work (example in regard to their effectiveness), and in turn to organizational impacts (example, in regard to business strategy and performance) (Raymond, Bergeron, 2007). While the TAM explains IS use in a similar manner by the system's perceived usefulness and perceived ease as long as information systems in organizations are under development.

Project management information systems prove their position as an effective tool for achieving project success. Using PMIS to manage projects is not enough, but it is essential as it plays an important role in the success of the companies. Since human activities affect the results of information systems. So measuring the success of information systems and its impact on the success of the projects is a complex task. Project Management Institute found that, project management information systems are tools and techniques that are used to distribute all the information in projects Gorla, & Somers, & Wong (2010). Turner (2009) showed that Project management information systems create a Database that managers need for good coordination of p e o p l e and activities in p r o j e c t s .

PMIS also should be able to review the situation that people are involved in projects. In IT industries, Hasan, & Shamsuddin, & Aziati, (2013) estimated that 75% of IT projects management have succeeded under the support of PMIS; while, 75% of projects would fail without such a support. Since the success of project is a combination of project management success and project product success use. Both the ISSM and the TAM offer widely accepted and validated representations and explanations of the IS use phenomenon.

This is supported by studies done by Larsen, Lee and Rai (Larsen 2003, Lee, Kozar & Larsen 2003, Rai, Lang & Welker 2002).

2.7 Conceptual Framework

The conceptual framework has four independent variables and one dependent variable. The independent variables identified for the study were: the System software, quality of information, the System User satisfaction, and the System Use in Project management information system. The project performance which is the dependent variable will be assessed on whether the project is completed within the set time, budget and within the specified specification of the projects. The ability of the project to perform is also linked to a large extent on an Organization's policies and procedures (moderating variable). The performance of project tasks with regards to cost, time and quality by utilizing the of Project management information system will also be affected by the project manager's attitude towards Information technology to aid in decision making and managing the project (intervening Variable).

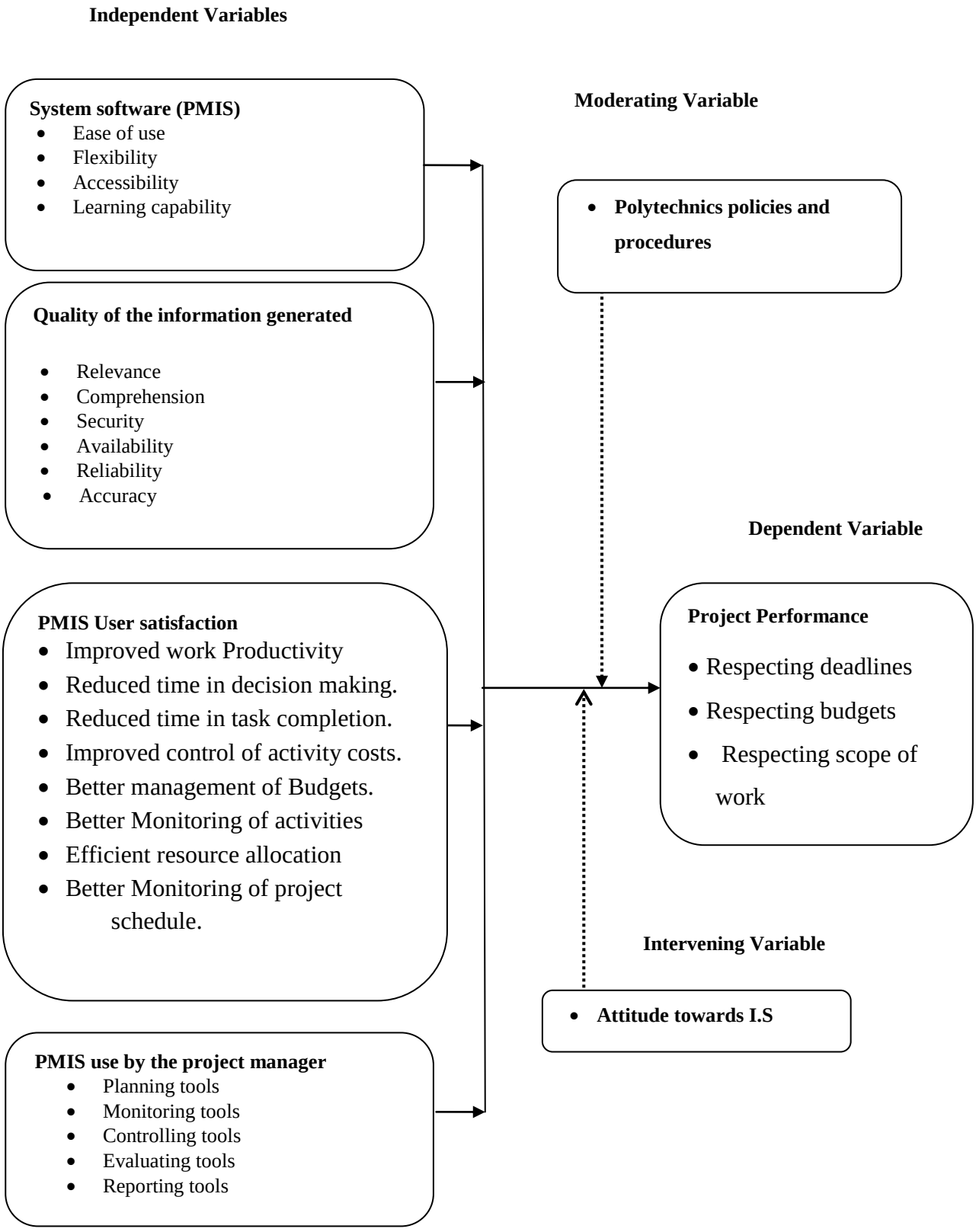

Figure:3 Conceptual Frame work

2.8 Knowledge Gap

Table 2.1: Knowledge Gap

Variable	Author(s)	Key Findings	Knowledge Gap
Project Performance	R. Pellerin, N. Perrier, X. Guillot and P.-M. Léger	Project performance depends not only on the use of the Project definition and Document control subsystems, but also on Cost management and development projects activity management subsystems. An increasing statistical relationship exists between the use (yes/no) of the development projects activity management subsystem and the performance of the projects	No findings that could explain the relationship between these success constructs at either the individual or organizational levels of analysis
System software	Davis (1989) DeLone and McLean (2009)	Each IS success model cannot be used in all practical situations. The scope o f each model is limited so these can be used in different contexts	Does not measure success but it is used to study and predict the user's intention to use Information technology. Examined antecedents of one or more constructs in the D&M model.
Information Quality	Martinsuo & Lehtonen, (2007); Raymond & Bergeron, (2008)	The information quality was found to lead indirectly, thus not directly, to project success through timelier decision	The Effect of project and information overload on the quality of the PMIS information.

		making	
The System User satisfaction	Ali & Money (2005)	The project managers are more likely to use software that is free of complexity and is easy to understand.	investigate what factors are important, in the perception of project managers, in order to generate high quality information with respect to availability, accuracy, relevance, comprehensiveness and in particular reliability.
The System Use	Raymond & Bergeron, **(**2008).	Use of Project Management Information Systems (PMIS) is considered to be advantageous to project managers because of the supposed contribution regarding timelier decision making and project success	Focus only on project managers. Does not focus on interdependencies and interactions between projects and project overload

2.9 Summary

The quality of the system has a significant impact on the acceptance of the system. In addition it has effect on the efficiency and effectiveness of the organizational performance in organizations. That's where the system is ease of use and easy to learn will produce good quality of information. Moreover information quality will have a significant impact on the acceptance of the information systems and improve the organizational performance. The quality of the system and quality of the information are considered as a key factors affecting Information Systems acceptance and improve the organizational performance Hasan, et al, (2013).

As long as information systems in organizations are under development, Project management information systems prove their position as an effective tool for achieving project success. Many of characteristics of these systems are still unknown. Using PMIS to manage projects

is not enough, but it is essential as it plays an important role in the success of the companies. Since human activities affect the results of information systems. So measuring the success of information systems and its impact on the success of the projects is a complex task. Project Management Institute found that, project management information systems are tools and techniques that are used to distribute all the information in projects.

Kositanurit et al (2007) identified a significant relationship between perceived ease of use and performance, but no relationship between reliability and performance for individual users of ERP systems. Bharati and Chaudhury (2006) found a significant relationship between system software, measured by reliability, flexibility, ease of use, and convenience of access, to decision-making satisfaction. At the organizational level, there exists strong support for the relationship of system software to net benefits. The quality of an EDI system was found to be related to organizational efficiency, sales, and organizational image (Farhoomand & Drury, 1996). System software quality of a data warehouse was associated with decreased time and effort for decision making (Wixom & Watson, 2001).

Gefen (2000) also found that perceived ease of use and perceived correctness of software were related to perceived usefulness. The technical performance of an information system was found to indirectly affect the perceived value of the system, mediated by use and user satisfaction (Weill & Vitale, 1999). Another study compared system quality and impact of system use at operational, tactical, and strategic levels (Bradley et al., 2006). The relationship between system quality and impact of use at these various levels was significant. However, when these results were analyzed more closely, it was found that this relationship was not significant at all for formal firms and only significant at operational levels within entrepreneurial firms.

A study done by Yaser Hasan Al-Mamary, Alina Shamsuddin , Nor Aziati(2014) on The Relationship between System Quality, Information Quality, and Organizational Performance revealed that there is a positive relationship between system quality , information quality and organizational performance.

Gorla et al (2010), assume that system quality is positively associated with information quality and organizational impact, and information quality is positively associated with organizational impact. Raymond and Bergeron confirms that the quality of information output by a PMIS is strongly associated to the technical and service aspects of the system,

that is, to system software. According to Hasan et al (2013), there is significant relationship between system software and information quality.

CHAPTER THREE:RESEARCH METHODOLOGY

3.1 Introduction

The chapter describes the methodology that was adopted in the study. It described the research design, target population, sample size and sampling techniques, data collection instrument, piloting, validity and reliability of the instrument, data collection procedure and data analysis techniques that was used.

3.2 Research Design

Kothari (2004), defines research design as the arrangement of the conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure, According to Muma (2010), research design defines the conceptual structure in which research is conducted and constitutes the blue print for the collection, measurements and analysis of data.

The research used descriptive survey design because descriptive research does not modifying the situation under study or determining the cause-effect relationship. It also enabled the researcher to get the opinions of project managers involved in development projects in their natural setting. This design is also useful in project management and decision making. It involves acquiring Information about a certain segment of the population and getting information on their characteristics, opinions or attitudes (Orodho, 2003). Churchill and Brown (2004) also observe that descriptive research design is appropriate where the study seeks to describe the characteristics of certain groups, estimate the proportion of people who have certain characteristics and make predictions.

3.3 Target population

According to Mugenda and Mugenda (2003), a target population is the accessible population from where a sample is drawn and upon which the researcher wants to generalize the findings of a study. This study targeted managers, instructors, and support staffs of vocational training institutions, who are directly involved in running the affairs of youth polytechnics education in Embu. These youth polytechnic institutions are dispersed in all five Sub Counties in Embu County, namely, Embu West with headquarters at Embu town, and Embu North with

headquarters at Manyatta, Embu East with headquarters at Runyenjes, Mbeere North with headquarters at Siakago, and Mbeere South with headquarters at Kiritiri market..

Oso and Onen (2005) defined population as the total number of the subjects of interest to the researcher. The study focused at population of 265 respondents comprising of the 143 Youth Polytechnic instructors, 32 Youth Polytechnic managers and 90 support staffs from the 32 public Youth Polytechnics in Embu County.

3.4 Sample Size and Sample selection

Cooper & Schindler (2003) define sampling as selecting a sample of subjects from a defined population as representative of that population. Churchill and Brown (2004) noted that the correct sample size in a study is dependent on factors such as the nature of the population to be studied, the purpose of the study, the number of variables in the study, the type of research design, the method of data analysis and the size of the accessible population. This defined population is referred to as a sampling frame.

3.4.1 Sample Size

A sample is a section of a particular population and should reflect the prominent features of the population from where it is drawn, Donald (2010). Generally, the sample size depends on the factors such as the number of variables in the study, the type of research design, the method of data analysis and the size of accessible population. According to Munisparck (2008), a study's sample size depends on the nature of the target population, which is either homogenous or heterogeneous and must be larger in the former than the latter.

Gay in Mugenda and Mugenda (2003), suggests that for correctional studies, 30 cases or more are required; for descriptive studies,10-30 percent of the accessible population is enough; and for experimental design at least 30 cases as required. In this study, the researcher used 30% of 143 Youth Polytechnic instructors, 32 Youth Polytechnic managers and 90 support staffs from the 32 Youth polytechnics in Embu county, Kenya

3.4.2 Sample selection

Sampling is defined as the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate is made, Kothari (2005).It is as a process

of selecting units from a population of interest so that by studying the sample, one may fairly generalize the results back to population from which they were selected.

This study employed simple random sampling design in which each item from the target population was accorded equal chance of being selected and included in the final sample, hence ascertaining objectivity in sample selection. Random sampling technique was adopted in sample selection, in which the target population was stratified on the base of the three distinctive categories, such as managers, instructors, and support staffs. The process of sample selection is illustrated in table 3.1.

Table:3.1 sampling

Stratum	Total Population	Sample Percentage	Sample Size
Managers	32	30	10
Instructors	143	30	43
Support staffs	90	30	27

Source: Embu County Education Office, (2016)

3.5 Data collection Instruments

Owens (2002) stated that questionnaires have potential in reaching out to a large number of respondents within a short time; give the respondents adequate time to respond to the items**,** offer a sense of security (confidentiality) to the respondents and it is an objective method since no bias resulting from the personal characteristics. Questionnaires were used to collect Data. A Likert scale was used in the questionnaire to measure attitudes presented by the respondents as recommended by Babbie (2011). The questionnaires were self-administered by use of two trained research assistants and the researcher. The questionnaire was divided into two sections: Section one will collect the demographic characteristics of the target population i.e. the age, gender, level of education etc., while section two was divided into five parts based on the themes of study; part A the PMIS system was measured with four items: accessibility, flexibility, ease of use, , learning ease. Each of items was measured on a five point scale varying from 1 (low quality) to 5 (high quality).

Part B information quality was measured with six items: accuracy, relevance, comprehensiveness, security availability and reliability. Each of these items was measured on

a five point scale varying from 1 (low quality) to 5 (high quality). Part C PMIS use was measured by ascertaining the extent to which various system functions and their associated tools was used by project managers/principals. The PMIS functions were divided into six categories. The planning function tools aim at preparing the overall project plan, the monitoring function tools were used to regularly assess project progress, the controlling function tools were used to make specific changes to the project, the evaluating function tools are targeted toward project auditing, the reporting function tools which gave information on the most basic aspect of the project and the communication function tool were used for sharing information among the departments. A score for each category was obtained by averaging the project managers'/principals' use of specific tools. Five-point scales was employed: 1 (never used), 2 (rarely used), 3 (occasionally used), 4 (often used), and 5 (very often used).

Part D impacts on the PMIS user was measured by the perceived effect of the PMIS on the following 10 items: improvement of productivity at work, increase in the quality of decisions, reduction of the time required for decision making, reduction of the time required to complete a task, improved control of activity costs, better management of budgets, improved planning of activities, better monitoring of activities, more efficient resource allocation, and better monitoring of the project schedule. A five-point Likert scale was used, varying from 1 (completely disagree) to 5 (completely agree). Part E impacts of the PMIS on project performance was based on the perceived contribution of the PMIS with regard to three performance criteria: respecting deadlines, respecting budgets, and respecting quality specifications, using a five-point scale varying from 1 (null contribution) to 5 (very high contribution).

3.5.1 Pilot testing of the Instrument

The study selected 10% of target population to test the reliability of the research instrument. Cronbach' Alpha was used to test the internal consistency of the questionnaire. In the pilot test all constructs of the questionnaire was studied. Iriamurai youth polytechnic, Tenri vocational training centre, Nembure vocational training center and Ena vocational training center were used for pilot testing.

3.5.2 Validity of the Instruments

Validity is the accuracy, soundness or effectiveness with which an instrument measures what it is intended to measure. In this study, the instruments were first discussed between the researcher and the supervisor who provided his expertise and ensure that the instruments measured what they intended to measure as recommended by Kumar (2005).

3.5.3 Instrument Reliability

According to (Copper and Schindler 2010) reliability is the accuracy and precision of a measurement procedure. It was used to measure the degree to which a research instrument gives consistent results. A construct composite reliability co-efficient (Cronbach alpha) of 0.6 or above, for all the constructs was considered adequate for this study. The acceptable reliability coefficient was coefficient greater than $\alpha>0.7$ and above, (Rousson, Gasser &Seifer, 2012). Cronbach Alpha was used to test the reliability of the research instrument.

Table3.2: Reliability analysis

Reliability Statistics	
Cranach's Alpha	N of Items
.917	53

From the findings, the questionnaire was found to have an Alpha value of 0.917 with 53 items. The findings show that the research instrument used was reliable.

3.6 Data collection procedure

The questionnaires were self-administered by use of two trained research assistants and the researcher. Self-administered questionnaire will enable one to elucidate the questions and probe further for more relevant information. This made it clear and yield relevant responses. To increase the response rate, an introduction letter was attached to all the questionnaires to assure the respondents of their confidentiality.

3.7 Method of Data Analysis

The whole process, which starts immediately after data collection and ends at the point of interpretation and processing data is referred to as data analysis according to (Kothari, 2004).The completed questionnaires were edited for completeness and consistency before analyzing the responses. The study generated qualitative and quantitative data. Quantitative data was coded and entered into Statistical Packages for Social Scientists (SPSS Version 21.0) and analysed using descriptive statistics. Qualitative data was analysed based on the responses. Responses with common themes were grouped together into coherent categories. Descriptive statistics involved the application of absolute and relative (percentages) frequencies, measures of central tendency and dispersion (mean and standard deviation respectively). Karl Pearson's correlation was conducted to determine the relationship between the independent variables: the system software, quality of information, the system user and the system use against the dependent variable Project performance. Quantitative data was presented in tables and explanation was presented in prose.

3.8 Ethical Considerations

The researcher ensured that proper authority was sought from the relevant authorities before commencement of the study. All respondents were treated with courtesy and respect so as to avoid misunderstanding between the enumerators and respondents and they were informed of the purpose of the study. During fieldwork, the respondents were politely requested to fill the questionnaire and assured of confidentiality to the information they provide.

3.9 Operational Definition of Variables

Table 3.3 shows operational definition of variables

Table:3.3 Operationalization of Variables

Variable	Indicator	Measurement scale	Data Collection Methods	Tools of Analysis	Data analysis
Project Management System Software and Project performance	• Ease of Use • Accessibility • Flexibility • Learning capability	Ordinal	Questionnaire	Mean Range Std. Deviation	Correlation
Quality information and Project Performance	• Accuracy • Relevance • Comprehension • Security • Availability	Ordinal	Questionnaire	Mean Range Std. Deviation	Correlation
Project Management Information System user and Project Performance	• Improved work Productivity • Reduced time in decision making. • Reduced time in task completion.	Ordinal	Questionnaire	Mean Range Std. Deviation	Correlation

	• Improved control of activity costs. • Better management of Budgets. • Better Monitoring of activities • Efficient resource allocation • Better Monitoring of project schedule.				
Project Management Information System use and Project Performance.	• Preparing the overall project plan by use of the following planning tools WBS, Gantt charts, PERT, and CPM. • Better Monitoring of activities using monitoring function tools. • Making changes as the project is ongoing using the controlling function tools.	Ordinal	Questionnaire	Mean Range Std. Deviation	Correlation

	• Utilizing evaluating function tools during project auditing.				
Project Performance	Respecting deadlines Respecting budgets Respecting scope of work	Ordinal	Questionnaire	Mean Range Std. Deviation	

CHAPTER FOUR:DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter covers the presentation and interpretation of the findings. The purpose of this study was to establish the influence of Project Management Information System attributes on performance of projects a case in youth polytechnic development projects in Embu County, Kenya. The findings are presented in tables.

4.2 Response Rate

This study had a sample of 10 managers derived from a target population of 32, 43 instructors derived from a target population of 143 and 27 support staff derived from a sample of 90 respondents whereby only of 8 managers, 37 instructors and 21 support staff were obtained. This represents a response rate of 83%. According to Babbie (2002) any response of 50% and above is adequate for data analysis thus 83% is even better.

4.3 Demographic Characteristics Of Respondents

The study wanted to establish the background information of the respondents which includes the respondents' gender, age bracket, marital status, and their position in the polytechnic, technological facilities availability, technological facilities adequacy, technological facilities support of development projects and the review of the technological facilities.

4.3.1 Gender Distribution Of Respondents

The study sought to find out the gender of the respondents. The findings obtained are as shown in table 4.1.

Table:4.1 Distribution of Respondents by Gender

Gender	Frequency	Percent
Male	40	60.6
Female	26	39.4
Total	66	100.0

From the findings, most respondents were males at a percentage of 60.6% while 39.4% of were females. This representation showed that most of the workers in youth polytechnics are males.

4.3.2 Age Of Respondents

The study also sought to establish the age ranges of the respondents. This was important in knowing which age range formed the majority of those who utilized the system in project management. The findings were as shown in table 4.2.

Table 4.2: Distribution of Respondents by Age

Age range		Frequency	Percent
	21 - 25 years	1	1.5
	26 - 30 years	25	37.9
	31 - 35 years	24	36.4
	36 - 40 years	9	13.6
	Above 40 years	7	10.6
	Total	66	100.0

From the study findings, 37.9% of the respondents were aged between 26-30 years, 36.4% of the respondents were aged between 31-35 years, 13.6% of the respondents were aged between 36-40 years, 10.6% of the respondents were aged above 40years and 1.5% of the respondents were aged between 21 – 25 years. From these findings, it can be concluded that most of the respondents were aged between 26 – 35 years.

4.3.3 Level Of Education Of The Respondents

The study also sought to establish the respondents' uppermost level of education. The level of education was very necessary in order to determine the capability of the respondents to utilize project Management information system. The findings are represented in the table 4.3

Table 4.3: Distribution of Respondents by their highest level of education

Level of education	Frequency	Percent
Masters degree	3	4.5
Bachelors degree	22	33.3
Diploma	41	62.1
Total	66	100.0

From the findings, 62.1% of the respondents indicated that their level of education was Diploma, 33.3% of the respondents indicated that their level of education was bachelors degree and lastly 4.5% of the respondents indicated that their level of education was a masters degree. These findings showed that most of the youth polytechnic employees had diploma as their highest level of education while very few had masters' degree and held a manager's position.

4.3.4 Role Of The Respondents

The study sought after establishing the position held by the respondents. The findings are represented in table 4.4.

Table 4.4: Distribution of Respondents by their role in youth polytechnics

Position held	Frequency	Percent
Manager	8	12.1
Instructor	37	56.1
Support Staff	21	31.8
Total	66	100.0

From the findings, 56.1% of the respondents were instructors, 31.8% were support staff and 12.1% were Managers. This shows that most of the employees of youth polytechnics are instructors since their core mandate is to impart skills.

4.4 Project Management Information System Software

The study sought to find out the influence of PMIS system software on performance of polytechnic development projects. The respondents were requested to select PMIS facilities and rate various aspects of general performance of Project Management Information System in their polytechnics. The results are shown in the tables.

4.4.1 PMIS Technological Facilities

The respondents were requested to indicate the availability of the PMIS technological facilities in the youth polytechnics. The results are shown in the table 4.5

Table 4.5: PMIS technological facilities

	N	Range	Mean	Std. Deviation
Computers	66	1	1.06	.240
Machines	66	1	1.41	.495
Equipment	66	1	1.30	.463
Internet	66	1	1.29	.456
Others	66	0	2.00	0.000

From the findings the respondents indicated with the mean of 1.06 and standard deviation of 0.240 that computers are available in most youth polytechnics, also respondents indicated with a the mean of 1.29 and standard deviation of 1.29 that internet is available in most of the youth polytechnics. Additionally respondents with the mean of 1.30 and standard deviation of 0.463 indicated little equipment are available to facilitate installation of PMIS. Lastly very few respondents indicated their polytechnic had machines with the mean of 1.41 and standard deviation of 0.495.

4.4.2 Adequacy Of PMIS Technological Facilities

Respondents were requested to indicate the extent they agree or disagree on the adequacy of the PMIS technological facilities in their youth polytechnics. The results are presented in table 4.6.

Table 4.6: Adequacy of PMIS technological facilities

Adequate Technology	Frequency	Percent	Cumulative Percent
Strongly Disagree	4	6.1	6.1
Disagree	24	36.4	42.4
Neutral	16	24.2	66.7
Agree	22	33.3	100.0
Total	66	100.0	

From the finding, 36.4% of the respondents disagreed on the adequacy of the PMIS technological facilities in their youth polytechnics, also 33.3% of the respondents agreed on the adequacy of the facilities. Additionally 24.2% of the respondents were neutral on the adequacy of the facilities in the youth polytechnics and lastly 6.1% of the respondents strongly disagree on the adequacy of the facilities.

4.4.3 PMIS Technological Facilities Use

Respondents were required to indicate how often PMIS technological facilities are used in supporting development projects. The results are shown in table 4.7

Table 4.7: PMIS Technological Facilities Use

Frequency of PMIS use	Frequency	Percent
Less Often	28	42.4
Neutral	7	10.6
Often	16	24.2
More Often	15	22.7
Total	66	100.0

From the finding respondents indicated with a 42.4% that PMIS technological facilities are less often used in supporting development projects. Also 24.2% of the respondents indicated often use of the facilities in development projects. Further, 22.7% indicated that facilities are more often used in the development projects. Lastly 10.6% of the respondents were neutral about the use of the PMIS technological facilities in the development projects.

4.4.4 PMIS Technological Facilities Review

The respondents were requested to indicate how often the PMIS technological facilities are subjected to reviews. The findings are indicated in the table 4.8.

Table 4.8: Review of PMIS facilities

Review of PMIS Facilities		Frequency	Percent	Cumulative Percent
	Annually	14	21.2	21.2
	quarterly	5	7.5	28.7
	Biannually	8	12.1	40.9
	Occasionally	39	59.1	100.0
	Others	0	0.0	100.0
	Total	66	100.0	

From the results above it was deduced that 59. 1% of the PMIS facilities were occasionally reviewed, 21.2% annually reviewed, 12.1% biannually reviewed, and 7.5% quarterly reviewed. The findings showed that the facilities were occasionally reviewed.

4.4.5 General Performance Of PMIS.

The respondents were requested to rate various aspects of general performance of Project Management Information System in their organization. The results are shown in table 4.9 below.

Table 4.9: Project Management system Software

	N	Range	Mean	Std. Deviation
Accessibility	66	4	2.95	.952
Ease of use	66	4	3.08	.865
Flexibility	66	4	2.73	.851
Learning Capability	66	3	2.88	.851

According to the findings, the respondents rated ease of utilizing the project management system software in their organization as high as shown by a mean of 3.08 and a standard deviation of 0.865. The respondents also indicated with a mean of 2.95 and a standard

deviation of 0.952 that the accessibility of PMIS in their organization was high. Additionally, the respondents rated the general performance of flexibility in their organization as moderate as shown by a mean of 2.73 and a standard deviation of 0.851. Also, the respondents indicated with a mean of 2.88 and a standard deviation of 0.851 that the general performance of learning capability in their institution was moderate.

4.5 Quality Of Information Generated

The study sought to establish the influence of quality information on the performance of development projects in youth polytechnics. The respondents were requested to rate the impact of the quality of information generated by PMIS in projects implementation. The findings are shown in table 4.10

Table 4.10: Information quality

	N	Range	Mean	Std. Deviation
Availability	66	3	2.95	.849
Relevance	66	3	3.42	.634
Reliability	66	4	2.98	.850
Accuracy	66	2	3.03	.701
Security	66	3	3.03	1.037
Comprehensiveness	66	4	2.98	.984

From the findings, the respondents indicated with a mean of 3.42 and a standard deviation of 0.634that relevance of information produced by Project Management Information System in project implementation in their organizations was high. Also, the precision of information produced by Project Management Information System in project implementation was rated as moderate as shown by a mean of 3.03 and a standard deviation of 0.701. Additionally, the respondents indicated with a mean of 3.03 and a standard deviation of 1.037 that security of information produced by Project Management Information System in project implementation in their organizations was moderate. Also reliability and comprehensiveness of the information were rated moderate with a mean of 2.98 and standard deviations of 0.85, 0.984 respectively. Lastly the availability of information produced by the project management information system was rated last with a mean of 2.95 and a standard deviation of 0.849.

4.6 Project Management System Use

The use of the Project Management Information System was measured by establishing the degree to which various system functions and their associated tools were actually used by project managers (Raymond, Bergeron 2007). The PMIS functions were divided into five categories: planning function tools, monitoring function tools, controlling function tools, evaluating function tools and reporting function tools. The outcomes were as shown below.

4.6.1 Planning Function Tools

The respondents were asked to indicate how often various planning function tools were utilized within the Project Management Information System in project implementation in their organizations. The results are presented in table 4.11.

Table 4.11: Planning Function Tools

	N	Range	Mean	Std. Deviation
Resource Allocation	66	3	2.71	.718
Overall Schedule	66	3	3.05	.919
Work Breakdown Structure (WBS)	66	4	2.79	.985
Program Evaluation & Review Technique(PERT)	66	4	2.41	1.067
Gantt Chart	66	3	2.24	.978
Critical Path Method (CPM)	66	3	2.52	1.011

According to the findings, the respondents indicated with a mean of 3.05 and a standard deviation of 0.919 that overall schedule was occasionally utilized in project implementation in their polytechnics. In addition, the respondents indicated with a mean of 2.79 and a standard deviation of 0.985 that work breakdown structure was often utilized in project implementation in their polytechnics. Further, the respondents indicated with a mean of 2.75 and a standard deviation of 0.718 that resource allocation was occasionally utilized in project implementation in their organizations occasionally. In addition, the respondents indicate with a mean of 2.52 and a standard deviation of 1.011 that CPM was occasionally utilized in project implementation in their organizations. Additionally, the respondents indicated with a

mean of 2.41 and a standard deviation of 01.067 that the overall PERT was occasionally utilized in project implementation in their organizations. Lastly, the respondents indicated with a mean of 2.24 and a standard deviation of 0.978 that Gant chart was occasionally utilized in project implementation in their organizations.

4.6.2 Controlling Function Tools

The respondents were asked to show how often various controlling function tools were utilized within the Project Management Information System in project implementation in their youth polytechnics. The results are presented in table 4.12.

Table 4.12: Controlling Function Tools

	N	Range	Mean	Std. Deviation
Modify tasks	66	3	2.56	.914
Fine tune forecast	66	4	2.62	.855
Reassign resources to low cost	66	3	2.39	.820
Cancel tasks	66	3	2.55	.948
Amend cost of resources	66	4	2.77	1.035

From the findings, the respondents indicated with a mean of 2.77 and standard deviation of 1.035 that amend cost of resources was often utilized in project implementation, also the respondents indicated with a mean of 2.62 and a standard deviation of 0.855 that fine tune forecast was often utilized in the project implementation in their youth polytechnics. Additionally the respondents indicated that modify tasks was occasionally utilized in project implementation with a mean of 2.56 and a standard deviation of 0.914.

Respondents also indicated with a mean of 2.55 and a standard deviation of 0.948 that cancel task controlling function was occasionally utilized. Lastly reassign resource to low cost was occasionally utilized with a mean of 2.39 and a standard deviation of 0.820.

4.6.3 Monitoring Function Tools

Respondents were requested to indicate how often the monitoring function tools were utilized in projects implementation within the project management information systems. The findings are shown in the table 4.13

Table 4.13: Monitoring Function Tools

	N	Range	Mean	Std. Deviation
Project reports	66	4	2.88	.985
Completed tasks	66	4	3.03	1.052
Percent project completed	66	4	2.55	.931
Effective schedule	66	4	2.70	.859
Remaining tasks	66	3	2.47	.706
Remaining days to complete	66	3	2.56	.787

From the findings the respondents indicated that Completed tasks with a mean 3.03 and a standard deviation of 1.052 was often utilized in project implementation, also indicated that project reports with a mean of 2.88 and standard deviation of 0.985 was often utilized in project implementation in their youth polytechnics. Additionally indicated that effective schedule with a mean of 2.70 and standard deviation of 0.859 was often utilized, the remaining days to complete tool was occasionally utilized with a mean of 2.56 and a standard deviation of 0.787. Additionally respondents indicated with a mean of 2.55 and a standard deviation of 0.931 that percent project completed tool was often utilized in project implementation. Lastly the respondents recorded that remaining tasks tool was occasionally utilized in projects implementation.

4.6.4 Evaluating Function Tools

Respondents were requested to indicate how often the evaluating function tools were utilized in projects implementation within the project management information systems. The findings are shown in table 4.14.

Table. 4.14: Evaluation function tools

	N	Range	Mean	Std. Deviation
Identification of cost	66	4	2.98	1.130
Variation of schedule	66	3	2.48	.864
Resource use tracking	66	4	2.82	1.162

From the results above respondents indicated with a mean of 2.98 and a standard deviation of 1.130 that identification of cost function was often utilized in project implementation in their youth polytechnics. Secondly resource use tracking function was occasionally utilized in project implementation within PMIS with a mean of 2.82 and a standard deviation of 1.162. Lastly respondents indicated with a mean of 2.48 and standard deviation of 0.864 that variation of schedule function was often utilized in projects implementation within PMIS.

4.6.5 Reporting Function Tools

Respondents were requested to indicate how often the reporting function tools were utilized in projects implementation within the project management information systems. The results are shown in table 4.15.

Table 4.15: Reporting Function Tools

	N	Range	Mean	Std. Deviation
Overview of projects	66	4	3.15	.965
Overview on working progress	66	4	2.52	.916
Task schedule slippage	66	4	2.89	1.054

From the results above, the respondents indicated with a mean of 3.15 and a standard deviation of 0.965 that the overview of the project was often utilized in projects implementation in their youth polytechnics. Additionally, the respondents indicated with a mean of 2.89 and a standard deviation of 1.054 that the task schedule slippage was often utilized in project implementation in their youth polytechnics. Lastly, the respondents indicated with a mean of 2.52 and a standard deviation of 0.916 that overview on working progress were often utilized in projects implementation in their organizations.

4.7 System User Satisfaction

The study sought to assess the influence Project Management Information System user satisfaction on performance of polytechnic development projects. The respondents were asked to indicate the extent to which they agreed that the quality of information produced by Project Management Information System in use influences Project performance in various activities highlighted. The findings are presented in table 4.16.

Table 4.16: System User satisfaction

	N	Range	Mean	Std. Deviation
Increased Productivity	66	4	3.55	1.026
Improved quality decision	66	4	3.52	1.070
Reduced task completion time	66	4	3.91	.956
Reduced decision making time	66	4	3.50	1.154
Better control of activity cost	66	4	3.24	.929
Better Management of budgets	66	4	3.15	1.218
Better Planning activities	66	4	3.55	1.055
Better monitoring of activities	66	4	3.44	1.217
Efficient Resource allocation	66	4	3.35	1.183
Better Monitoring of project schedules	66	4	3.29	1.212

From the findings, the respondents agreed with a mean of 3.91 and a standard deviation of 0.956 that reduction of the time required for decision making information produced by project management information system in use often influences the project performance. They also agreed with a mean of 3.55 each and a standard deviations of 1.055 and 1.026 respectively that better planning activities and increase in productivity produced by project management information system in use often influences the project performance respectively

Additionally the respondents agreed with a mean of 3.52 and a standard deviation of 1.070 that improvement in the quality of decisions produced by project management information system in use occasionally influences the project performance. Further, the respondents indicated with a mean of 3.50 and a standard deviation of 1.154 that reduction of the time required for decision making produced by project management information system in use often influences the project performance. Also the respondents agreed with a mean of 3.44 and a standard deviation of 1.217 that better monitoring of activities produced by project management information system in use often influences the project performance.

In addition, the respondents agreed with a mean of 3.35 and a standard deviation of 1.183 that more efficient resource allocation produced by project management information system in use often influences the project performance. Also, the respondents agreed with a mean of 3.29 and a standard deviation of 1.212 that better monitoring of the project schedule produced by project management information system in use often influences the project performance.

Second last, the respondents indicated with a mean of 3.24 and a standard deviation of 0.929 that better control of activity costs produced by project management information system in use influences the project performance. Lastly, the respondents indicated with a mean of 3.15 and a standard deviation of 1.218 that better management of budgets produced by project management information system in use influences the project performance.

4.8 Project Performance

The respondents were asked to rate the impact of PMIS on the general project performance. The results are shown in table 4.17.

Table 4.17: Project performance

	N	Range	Mean	Std. Deviation
Meeting quality specifications	66	2	3.33	.730
Adhering to budgets	66	2	3.42	.556
Meeting deadlines	66	3	3.64	.888

According to the findings, the respondents indicated with a mean of 3.64 and a standard deviation of 0.888 that meeting deadlines had moderate contribution on the general project

performance. Also, the respondents indicated with a mean of 3.42 and a standard deviation of 0.556 that adhering to budgets had low contribution on the general project performance. Lastly, the respondents indicated with a mean of 3.33 and a standard deviation of 0.730 that meeting quality specification had a low contribution on the general project performance.

4.9 Correlation Of The Independent And Dependent Variables

The table 4.18 shows the correlation coefficient which described the strength and direction of the relationship between the independent and dependent variables.

Table 4.18: correlation analysis

		System software	Quality Information generated	System user	System use	Project performance
System soft ware	Pearson Correlation	1	0.930	0.883	0.973	0.971
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00
Quality of Information generated	Pearson Correlation	0.595	1	0.722	0.920	0.953
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00
System user	Pearson Correlation	0.930	0.871	1	0.858	0.786
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00
System use	Pearson Correlation	0.976	0.922	0.953	1	0.921
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00
Project performance	Pearson Correlation	0.971	0.953	0.786	0.921	1
	Sig. (2-tailed)	0.00	0.00	0.00	0.00	0.00

From the correlation analysis, the study found that there is a positive relationship between the project management information system and project performance, where the correlation coefficients was 0.971 and a p-value of 0.000. The study also found that the quality of information and project performance correlate positively with correlation coefficients of 0.953 and p-value of 0.000. Further the study found that there is a positive relationship between the project management information user and project performance with a correlation coefficient of 0.786 and a p-value of 0.000. Lastly, the study found that there is a positive relationship between project management information system use and project performance with a correlation coefficient of 0.921 and p-value of 0.000.

CHAPTER FIVE:SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS.

5.1 Introduction

This chapter presents the discussion of key data findings, conclusions drawn from the findings highlighted and recommendations made. The conclusions and recommendations drawn were focused on addressing the objectives of the study.

5.2 Summary Of Findings

The study sought to determine the influence of PMIS system software and performance of polytechnic development projects, to establish the influence of quality information generated by PMIS and performance of polytechnic development projects, to assess the influence Project Management Information System user satisfaction and performance of polytechnic development projects and to determine the influence of Project Management Information System use by the manager and performance of polytechnic development projects.

5.2.1 PMIS System Software And Performance

From the findings many youth vocational training centers have computers with the mean of 1.06 followed by internet with the mean of 1.29, few have some equipment to facilitate installation of PMIS with the mean of 1.30 and very few had machines with the mean of 1.41.

From the finding, 36.4% of the respondents disagreed on the adequacy of the PMIS technological facilities while 33.3% agreed on the adequacy of the facilities. The findings showed that lack of enough PMIS technological facilities affect the performance of the project management information system in youth polytechnics.

From the results it was deduced that 59. 1% of the PMIS facilities were occasionally subjected to reviews, 21.2% of the PMIS technological facilities were annually subjected reviews hence affecting the performance of the project management information system in use in youth polytechnics. According to the findings the respondents appreciated that project management system software in use in their youth polytechnics it was easy to use which was rated with a mean of 3.08 and a standard deviation of 0.865. The findings showed that the project management system software in use in youth polytechnic is easily accessible by the respondents; this was rated with a mean of 2.95 and a standard deviation of 0.952.

5.2.2 Quality Information Generated By PMIS And Performance

The quality of generated information was measured using six items which were rate as either high or excellent of the likert scale. The relevance, accuracy and security of the information generated by the software were the characteristics that were rated high with mean of 3.42, 3.03 and 3.03 respectively. This showed that the information was relevant, accurate and free from any malicious threat for the tasks. Quality of information generated by the PMIS is directly and strongly related to PMIS use and to the system's impacts on the system manager. Information quality is not the end by it- self however, as it leads indirectly to project success. In the youth polytechnic management, it's only through the actual use of the PMIS that will have influence on the development projects success. Moreover information quality will have a significant impact on the acceptance of the information systems and improve the organizational performance.

5.2.3 Project Management Information System User Satisfaction And Performance

This component was measured by determining how well the project managers were able to perform various project tasks using the software and information generated by the software. The performance of the tasks were rated as either occasionally or often meaning that with the use of the software the project managers were able to reduce time required to finish tasks in their youth polytechnics which was rated with a mean of 3.91 and standard deviation of 0.956 in a much better way. Decision making process had improved due to the timely availability of quality information required for making the decision. The respondents also agreed that their productivity and planning activities had improved with the use of the software at a mean of 3.55 each and standard deviation of 1.026 and 1.055 respectively. The project managers also said they were able to effectively and efficiently manage the project resources. The use of software had helped the managers improve on performance of their project tasks thus improving the probability of project success.

5.2.4 Project Management Information System Use By The Manager And Performance

From the finding respondents indicated with a 42.4% that PMIS technological facilities are less often used in supporting development projects while 24.2% of the respondents indicated often use of the facilities in development projects. The use of PMIS helped project managers to achieve higher project success in terms of time, budget and quality. Due to the quality of information generated by the PMIS project managers are more productive in their work. The

PMIS tools enhance their capacity to perform the various tasks like planning, monitoring, controlling, evaluating and reporting. Project performance improvement like staying within the project budget, timeline and quality specifications may be achieved through use of the system by the user to perform project tasks.

5.3 Discussion Of Findings

The study results are discussed in terms of the objectives and their direct and indirect effects of project management information system on project performance.

5.3.1 PMIS System Software And Performance

The quality of the system software has a significant impact on the acceptance of the system, its effect on the efficiency and effectiveness of the organizational performance in organizations. That's where the system that is easy to use and easy to learn will produce relevant information. The quality of the system software and accuracy of the information are considered as a key factors affecting IS acceptance and improve the organizational performance. Powerful project management software has become a prerequisite to manage the projects more efficiently and effectively, and aid the project managers in their decision-making (Havelka et.al, 2006).

5.3.2 Quality Information Generated By PMIS And Performance

According to AlMamary et al (2008), a number of researchers consider information quality as important factor to PMIS success in organization. This study finding showed that the quality of information is directly and strongly related to project management information system use and to the systems impacts on the project manager. Information quality is not an end by itself however, as it leads only indirectly to project performance. It is only through the actual use of the project management information system by and the systems impacts on the project manager that the quality of information can influence project performance. Cleland agrees that the best information loses its value if it’s not available to people who require it to make decisions and direct actions (Cleland, 2004b).

Better quality of information results increases the opportunity of the project management information system being used, which in turn allows the system to have a positive impact on the project manager. As such, the quality of information output by the project management information system leverages the project manager’s work as a professional. Ali & Money

(2005) through several studies also concluded that information quality has the greatest total effect on the use of project management software. This suggests that project managers are more willing to accept Project Management Information System on the base of the quality of the information output and that they are more likely to use software that provides them with an appropriate level of details that fits their work requirements, is free of complexity, and is simple to understand and communicate with the project team.

5.3.3 Project Management Information System User Satisfaction And Performance

Raymond noted from his studies that among the managers who participated in the study, a large number indicated strong impacts of the Project Management Information System upon the successful close of their projects, while others did not (Raymond, Bergeron 2007). The results of this study also indicated that, in general, the low use of Project Management Information System depended upon a system of lower quality that produced lower quality information; hence they used their system less and were less supported in their project management task.

This component was measured by determining how well the project managers were able to perform various project tasks using the software and information generated by the software. According to (DeLone & McLean, 2003; Raymond &Bergeron, 2008; Seddon & Kiew, 1994) relevance, accuracy, availability, reliability, consistency and timeliness are factors related to information quality. This study also indicated the performance of the tasks were rated as either occasionally or often meaning that with the use of the software the project managers were able to reduce time required to complete task

The PMIS software on it- self does not have a direct influence on project performance, it's only through relevant information, extensive use of the system, and individual impact on the project manager that the system has an effect of project performance. Positive impact on managerial work is crucial to project performance, greater use of the PMIS does not lead parse to greater impact on project performance. It is only indirectly through it contribution to managerial work that this use contribute to project success. The system's ease of use, accessibility, learn capability and flexibility play an significant function in producing relevant, accurate and secure information as perceived by the development project manager for the accomplishment of the development projects.

5.3.4 Project Management Information System Use By The Manager And Performance.

It is very advantageous to utilize a specialized Project Management Information System for it provides the project team and manager to use to correct amount and thus quality information. Caldwell (2004). This study indicated the use of the various function tools i.e. planning, monitoring, Evaluation and reporting tools had led to improving the likelihood of project performance due to the quality of information generated by the PMIS. Project managers are more productive in their work since the PMIS tools enhance their capacity to perform the various tasks in their youth polytechnics.

5.4 Conclusion

PMIS must provide relevance, accurate and secure information that will enable the project team to carry out their tasks efficiently and effectively. It is not the complexity of the software that matters but the reliability and comprehensiveness of the information generated by the system and the ability of the user to use the information to manage the development projects. This information helps the users to perform their tasks in a much professional manner. When tasks are best performed project success is achieved. It is also concluded that organizations should adopt the use of PMIS in the management of their projects. PMIS guarantees better management of project since it generates relevant information needed for the management of the project. Following the conclusions of previous research that project management information system success models should continue to be validated and challenged, the results of this research showed that the use of a project management information system is in fact advantageous to youth polytechnics development project in Embu County, Kenya.

Improvements in effectiveness and efficiency in managerial responsibilities were observed in terms of better project planning, scheduling, monitoring, controlling and reporting. Reduction of time to complete task, Improvements in productivity and better planning of activities were also observed in terms of timelier decision-making and proper budgeting. Advantages obtained from project management information system use are not limited to individual performance but also include project performance. It was also noted that the systems must provide relevant, secure and accurate information that will enable the project team to perform their tasks efficiently and effectively. The complexity of the software does not matters but the relevance of the information generated by the system and the ability of the user to use the

information to manage the project. This information helps the users/ project managers to perform their tasks in a much professional manner. One can therefore conclude that project management information system make a significant contribution to project performance and should go on to be the object of project management research.

5.5 Recommendations

This research report recommends that since there is significant relationship between project management software, quality of information, system user and system use with regard to project performance, in development projects of youth polytechnics:

1. Ministry of education and the county government should make sure all youth polytechnics are well equipped with adequate technological facilities.

2. Youth polytechnics should adopt the use of Project Management Information System in the management of their development projects. This is because they generate, relevant, accurate and secure information needed for the effective and efficient management of the project and decision making.

3. As the research results shows the use of a project management information system is a very important attribute to PMIS Users. This is due to the fact that improvements in effectiveness and efficiency in managerial tasks were observed in terms of better project planning, scheduling, monitoring, and control. Improvements in productivity were also observed in terms of timelier decision-making. Therefore all youth polytechnics stakeholders should be involved in the procuring and installation of this system software.

4. The managers and instructors in youth polytechnics should be well qualified even up to the level of masters in order to order to ensure proper management of development projects with the available systems.

5.6 Areas for further research

Future studies of the influence of Project Management Information System attributes towards project performance could:

1. Apply more comprehensive and consistent measures of use in order to better understand the effect of use on user satisfaction and net benefits.

2. More research is required to investigate the relationships that have not been adequately researched. Empirical research is also needed to establish the strength of interrelationships across different contextual boundaries.

3. Evaluate the effects of the use of Project Management Information Systems indecision making in a multi-project environment. This is because increasing numbers of organizations are facing the complexity of multi-project management. Research on this subject is scarce, mainly focusing on specific aspects or single project management information support.

4. Finally, since the majority of the participants in this research indicated not to be satisfied with the quality of the PMIS they use, a suggestion for further research is to investigate what factors are important, in the perception of project managers, in order to generate high quality information with respect to availability, accuracy, relevance, comprehensiveness and in particular reliability.

References

Ahlemann, F. (2009). Towards a conceptual reference model for project management information systems. *International Journal of Project Management, 27(1), 19-30.*

Ahlemann F, Backhaus K. (2006) Project management software systems – requirements, selection processes and products. Wu¨rzburg: BARC. Caruana, (2002) Service loyalty: The effects of service quality and the mediating role of customer satisfaction, European Journal of Marketing 36 (7/8) 811–828

Ali, A.S.B., Anbari, F.T. and Money, W.H. (2008). Impact of Organizational and Project Factors on Acceptance and Usage of Project Management Software and Perceived Project Success. Project Management Journal, 39 (2), 5-33

Al-Mamary, Y.H., & Shamsuddin, A., & Nor Aziati, A.H. (2014*) Key factors enhancing acceptance of management information systems in Yemeni companies*, Journal of Business and Management Research, Volume. 5, pp. 108-111.

Besner C., Hobbs B (2009). *An Empirical Investigation of Project Management Practice*, a Summary of the Survey Results: PMI.

Bharati P and Chaudhury A (2006) Product customization on the web*: an empirical study of factors impacting choice board user satisfaction.* Information Resources Management Journal, 19(2), 69–81.

Bradley RV, Pridmore JL and Byrd TA (2006) Information systems success in the context of different corporate culture types*: an empirical investigation. Journal of Management Information Systems, 23(2), 267–294.*

Caldwell, R. (2004). Project Management Information System: *Guidelines for Planning, Implementing, and Managing a DME Project Information System*. 1st edn, CARE, *New York*. 1st edn, CARE, New York.

Ciborra, C. U. 1996. The platform organization: *recombining strategies, structures, and surprises.* Organization Science, 103±118

Chiesa, V. (1995): Globalizing R&D around centers of excellence. *Long Range Planning*,

Churchill, G. A. and Brown, T.J. (2004). Basic Marketing Research, Ohio: Thompson Corporation. Community Economic Vitality." Community Development Journal, 39 (4): 385-400.

Cleland, D.I. 2004, "Project Management Information System" in Project Management: *Strategic Design and Implementation*, 5th edn, McGraw-Hill International Editions, Singapore, pp. 349.

Collins, T & Bicknell M. (1997). Crash: Learning from the world's worst computer disaster New York: Simon &Schuster.

Cooper, D.R & Schindler, P.S (2003). Business Research Methods. New York: Mc.

C. Howard, R.E. Levitt, B. Paulson, J.G. Pohl, C.B. Tatum (1989). Computer integration: *reducing fragmentation in AEC industry*, Journal of Computing in Civil Engineering, 3 (1) (1989) 18–32.

Davis, F. (1989). "Perceived usefulness, perceived ease of use, and user acceptance." *MIS Quarterly*, 13 (3), 319-340 (1989).

DeLone, W.H., McLean, E.R. (2003): *The DeLone and McLean Model of Information Systems Success:* A Ten-Year Update. Journal of Management Information Systems, 19 (4), 9-30

DeLone, W.H., McLean, E.R. (1992): Information Systems Success: *The Quest for the Dependent Variable.* Information Systems Research, 3(1), 60–95.

Elonen, S., & Artto, K. A. (2003). Problems in managing internal development projects in multi-project environments. *International Journal of Project Management, 21(6), 395-402.*

Ewa, U. E. (2005). The Budgetary process and educational development-Emphasis on how to avoid abandoned projects. Education Tax Fund workshop on financing education in Nigeria.

Farhoomand AF AND DRURY DH (1996) Factors influencing electronic data interchange success. *The data base for advances in information systems, 27(1), 45–57.*

Fox, J. and Murray, C. (2003), Conducting Research Using Web Based Questionnaires: Practical, Methodological, and Ethical Considerations', International Journal of Social Research Methodology, 6(2), 167180.

Gefen, D., Straub, D., & Boudreau, M. (2000). Structural Equation Modeling Techniques and Regression: Guidelines for Research Practice. Communications of AIS, 7(7), 1-78.

Gorla, N., & Somers, T.M., & Wong, B. (2010). *Organizational impact of system quality, information quality, and service quality.* Journal of Strategic Information Systems, Vol.19, pp.207–228.

Havelka, D., & Rajkumar, T.M. (2006), *Using the troubled project recovery framework: Problem recognition and decision to recover*. Eservice Journal, 5(1), 4373.

Hasan, Y., & Shamsuddin, A. & Aziati .N. (2013). *The Impact of Management Information Systems adoption in Managerial Decision Making*: A Review, The International Scientific Journal of Management Information Systems, Vol.8, No.4, pp.010-017.

Herroelen W. (2005), *Project scheduling theory and practice.* Prod Oper Manage, 14(4):41332.

James.G, (1999) Information Technology fiascoes & how to avoid them. *Datamation*,(43:11), 1 997, pp.84-89.

Johnson, J. (1995) Chaos: the dollar drain IT project failure. *Application development trends*, 2, 41-57

Kanaracus, C. (2008) Gartner: *global IT spending growth stable*. InfoWorld, April 3, 2008.

Kahn, B. K., & Strong, D. M., & Wang, R. Y. *(2002). Information quality benchmarks: product and service performance*. Communications of the ACM, Vol. 45, No. 4ve, 184–192.

Kaiser, M. G., & Ahlemann, F. (2010). Measuring Project Management Information Systems Success: *Towards a Conceptual Model and Survey Instrument.*

Kositanurit B, Ngwenyama O and O Sei-Bryson Kweku (2006) An exploration of factors that impact individual performance in an ERP environment*: an analysis using multiple analytical techniques.* European Journal of Information Systems, 15(6), 556–568.

Lee, S. K., & Yu, J. H. (2011). *Critical Success Factors for Project Management Information System in Construction.* KICEM Journal of Construction Engineering and Project Management (2011) Online ISSN 2233-9582.

Light M, Rosser B, Hayward S. (2005), *Realizing the benefits of projects and portfolio management.* Gartner, Research ID G00125673, 131.

Love P.E.D and Irani Z. (2003). 'A project management quality cost information system for the construction industry'. *Information and Management, 40(7): 649661*.

March and Sutton (1997) The Strategic Management Journal: *the Academy of Management Journal and Administrative Science*, Vol.8, issue 6 pp.698-706

Mburungu,Mulwa and Kyalo (2016).Implementation of organizational staff capacity: *implementation of electronic project monitoring information system in public tertiary institutions in Kenya*, http://journals.uonbi.ac.ke/damr ISSN-2224-2023, June vol6No, 3, 2016pp85-102.

Mugenda, O., Mugenda, A. (2003). Research Methods: *Quantitative and qualitative approaches* .Nairobi: African center for technology studies.

M. Fishbein, I. Ajzen.(1975).*Understanding attitudes and predicting social behavior*, Prentice-Hall, New Jersey,

M. Hjelt, B.C. Björk. (2007). *End-User Attitudes toward EDM Use in Construction Project Work: Case Stud*y, Journal of Computing in Civil Engineering, 21 (4).

Milosevic, D. (2003), Project management toolbox: *tools and techniques for the practicing project manager*, Hoboken, NJ: John Wiley and Sons.

Orodho, A., J (2003). Essentials of Educational and Social. *Science Research Methods. Nairobi:* Mazola Publishers. Project Management Knowledge. (2010). Project management Information Systems (PMIS).

Oso,Y and Onen,D (2005). A general Guide to writing Research Proposal and Report.Kisumu,Kenya.

Owens, L. K. (2002). Introduction to Survey Research Design. *Qualitative Approaches. Nairobi:* Acts Press.

Patanakul, P., & Milosevic, D. (2008a). The *effectiveness in managing a group of multiple projects*: Factors of influence and measurement criteria. International Journal of Project Management, doi:10.1016/j.ijproman.2008.03.001.

Patanakul, P., & Milosevic, D. (2008b*). A competency model for effectiveness in managing multiple projects.* The Journal of High Technology Management Research, 18(2), 118-131.

Petter ,S., & DeLone, W., & McLean,E. (2008). Measuring information systems success: models, dimensions, measures, and interrelationships. European Journal of Information Systems, vol.17,pp. 236–263.

PMI (2008) *A Guide to the Project Management Body of Knowledge (Pmbok Guide), 4th ed. Newtown Square*, USA: Project Management Institute.

Rainer R. & Turban,E.(2009). Huge problems at Britain's national health system. *In introduction to information systems,* 12(2), 83.

Rai, A., Lang, S. S., and Welker, R. B. (2002). "Assessing the validity of IS success models: An empirical test and theoretical information analysis." *Information System Research,* 13(1), 5–69.

Raymond, L. (1987). *Information systems design for project management*: a data modeling approach. Project Manage J, 18(4), 94-99.

Raymond, L., & Bergeron, F. (2008). *Project management information systems*: An empirical study of their impact on project managers and project success. International Journal of Project Management, 26(2), 213-220.

Son, H., Hwang, N., Kim, C. et al. KSCE J Civ Eng (2016). *Construction professionals' perceived benefits of PMIS: The effects of PMIS quality and computer self-efficacy.* International Journal of Knowledge and Research in Management & E-Commerce Vol.4,issue3.

Seddon, P., & Kiew, M.-Y. (1994). *A Partial Test and Development of the DeLone and McLean Model of IS Success.* Paper presented at the International Conference on Information Systems (ICIS), University of *Melbourne*, Australia.

Seddon PB (1997). *A respecification and extension of the DeLone and McLean model of IS success.* Information Systems Research, 8(3): 240 - 253.

Seddon P, Graeser V and Wilcocks Lp (2002) *Measuring organizational IS effectiveness*: an overview and update of senior management perspectives. The data base for Advances Seddon in Information Systems, 33(2), 11–28.

Seddon Pb and Kiew M-Y (1996). *A partial test and development of DeLone and McLean's model of IS success.* Australian Journal of Information Systems, 4(1), 90–109.

Seddon Pb, Staples S, Patnayakuni R and Bowtell M (1999). *Dimensions of information systems success.* Communications of the Association for Information Systems, 2, 2–39.

Simpl(2000). Simple group and new Zealand institute of economic research (Nzier) 2000 information technology: *performance of the Newzealand public sector in performance.* Report of the department of the prime minister and cabinet wellington.

Trochim, W. M. K. (2010). *Research Methods Knowledge Base*. From http://www.socialresearchmethods.net/kb/convdisc.php

Turner, J. R., & Speiser, A. (1992). *Programme management and its information systems requirements.* International Journal of Project Management, 10(4), 196-206.

Weill P and Vitale M (1999) Assessing the health of an information systems portfolio*: an example from process engineering.* MIS Quarterly, 23(4), 601–624.

Wilcocks,L.(1994).managing information system in U.K public administration: I*ssues and prospects. Public administration,72(1),41-47.*

Wixom BH and Watson HJ (2001*) An empirical investigation of the factors affecting data warehousing success. MIS Quarterly* 25(1), 17–41.

Yang Hd and Yoo Y (2004). *It's all about attitude:* revisiting the technology acceptance model. Decision Support Systems, 38(1), 19–31.

Yaser Hasan Al-Mamary, Alina Shamsuddin, Nor Aziati (2014). *The Relationship between System Quality, Information Quality, and Organizational Performance.* International Journal of Knowledge and Research in Management & E-Commerce Vol.4, Issue 3

Yoon, S.W. Yoon, S.Y. Chin, Y.S. Kim,(2006).*A Survey of the satisfaction level of construction information system from users' viewpoints on construction site,* Journal of Korea Institute of Construction Management, 7 (4) (2006) 126–136.

Van der heijden. H (2004). *User acceptance of hedonic information systems*. MIS Quarterly

Zmud,R.w.(1979). *Management of large software efforts*. MIS quarterly, 25(10):966-979.

Appendices

Appendix I:Letter of Transmittal of Data collection Instrument

CATHERINE W.NGARI,

P O Box 60-60125

EMBU

Date: 12th July, 2017.

Dear Sir

RE: REQUEST FOR PARTICIPATION IN A RESEARCH STUDY

I am a Postgraduate student at the University of Nairobi, pursuing a Masters degree in project Planning and Management. As partial fulfillment for the degree I am conducting a research study on "Influence of Project Management Information System attributes on Project Performance: A Case of youth polytechnic development projects in Embu, Kenya."

Therefore I would appreciate if you could spare a few minutes of your time to answer the following questions in regard to how Project Management Information system (PMIS) attributes influences project performance in your institution. All the information provided will be purely used for academic purposes and your identity will be treated with utmost confidentiality.

Your assistance will be highly appreciated and thank you in advance.

Yours faithfully,

Catherine Ngari

Mob No: 0720996382.

Appendix II: Research Questionnaire

Please tick [ ] in the bracket in front of the most appropriate response. Where explanation is required, use the space provided. The information you give will be used confidentially for the purpose of this study.

Name of Youth Polytechnic: .....

Constituency/Sub County: .....

Section One: Demographic Characteristics of Respondents

1. Indicate your gender

(a) Male [ ]

(b) Female [ ]

2. Indicate your age

(a) 21 – 25 years [ ]

(b) 26 – 30 years [ ]

(c) 31 – 35 years [ ]

(d) 36 – 40 years [ ]

(e) Above 40 years [ ]

3. Indicate your Level of Education

(a) Masters degree [ ]

(b) Bachelors Degree [ ]

(c) Diploma [ ]

(d) Others (specify) .....

4. Indicate your role in the polytechnic

(a) Manager [ ]

(b) Instructor [ ]

(d) Support staff [ ]

Section Two: Project Management Information System in Use at the Youth Polytechnic Development Project.

A. Project Management Information System Software

1. Indicate whether the following technological facilities that run PMIS exist in your youth polytechnic.

(a) Computers [ ]

(b) Machines [ ]

(c) Equipment [ ]

(d) Internet [ ]

(e) Other (specify) _____

2. Indicate the extent to which you agree or disagree that your polytechnic has adequate technological facilities to accommodate PMIS.

(1) Strongly disagree [ ]

(2) Disagree [ ]

(3) Neutral [ ]

(4) Agree [ ]

(5) Strongly agree [ ]

3. How often do the PMIS technological facilities used in supporting development projects

(1) Hardly [ ]

(2) Less often [ ]

(3) Neutral [ ]

(4) Often [ ]

(5)More often [ ]

4. How frequently are the PMIS technological facilities subjected to reviews.

(a) Annually [ ]

(b) Quarterly [ ]

(c) Biannually [ ]

(d) Occasionally [ ]

(e) Other (specify) .....

5. In your own opinion, explain the influence of PMIS on development projects of youth polytechnics in Embu County.

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6. How would you rate the general performance of Project Management Information System in your organization in the following areas? Please Tick

	1	**2**	**3**	**4**	**5**
	Very Low	**Low**	**Moderate**	**High**	**Very high**
Accessibility					
Ease of use					
Flexibility					
Learning capability					

B. Quality of Information generated by PMIS

1. In your opinion, how would you rate the impact of the quality of information produced by Project Management Information System in project implementation? Please Tick

	1	**2**	**3**	**4**	**5**
	Very bad	**Bad**	**Good**	**Very good**	**Excellent**
Availability					
Relevance					
Reliability					
Accuracy					
Security					
Comprehensiveness					

C. The Project Management Information System Use

1. In your opinion, how often are the following functions within the Project Management Information System utilized in project implementation? Please Tick

	1	**2**	**3**	**4**	**5**
	Never	**Rarely**	**Occasionally**	**Often**	**Very often**
Planning Function Tools					
Resource Allocation					
Overall Schedule					
Work Breakdown Structure (WBS)					
Program evaluation and review technique (PERT)					
Gantt Chart					
Critical path method (CPM)					
Controlling Function Tools					
Modify Tasks					
Fine-Tune Forecast					
Reassign resources to low cost					
Cancel Tasks					
Amend cost of Resources					
Monitoring Function					
Project Reports					
Completed tasks					
Percent Project Completed					
Effective Schedule					
Remaining Tasks					
Remaining days to complete					
Evaluating Function Tools					
Identification of cost					
Variation of Schedule					

Resource use Tracking					
Reporting Function Tools					
An Overview of project					
Overview on work-in-progress					
Task schedule slippage					

D. Impact on Project Management

1. In your opinion, do you agree that the quality of information produced by Project Management Information System in use influences the Project performance in the following activities? Please Tick

	1	**2**	**3**	**4**	**5**
	Strongly disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Increase in of productivity at work					
Improvement in the quality of decisions					
Reduction of the time required to complete a task					
Reduction of the time required for decision making					
Better control of activity costs					
Better management of budgets					
Better planning of activities					
Better monitoring of activities					
More efficient resources allocation					
Better monitoring of the project schedules					

E. Impact of Project Management Information System on Project Performance

How would you rate the general project performance in the following areas? Please tick

	1	**2**	**3**	**4**	**5**
	Very poor	**Poor**	**Fairly**	**Good**	**Excellent**
Meeting quality specifications					
Adhering to Budgets					
Meeting Deadlines					

Thank you for your cooperation and participation!!