ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

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The Impact of Project Manager's Competence on Project Success: The case of selected Ethiopian Companies

By: Netsanet Geleta

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Advisor: Abdurazak (Ph.D.)

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Statement of Declaration

I, Netsanet Geleta, state that this project work entitled 'The Impact of Project Manager's Competence on Project Success: The case of selected Ethiopian Companies' is carried out in partial fulfillment to gain Degree of Masters of Art in Project Management with the guidance and support of the project work advisor Abdurazak M. (Dr.). I have followed all ethical standards while conducting the project work and have duly and properly acknowledged all references and sources. I have conducted this project work by my own and same is not submitted for any Degree or Master program in this or any other institutions.

Netsanet Geleta _____ _____

Signature Date

Statement of certification

This is to certify that this research work by Netsanet Geleta, entitled 'The Impact of Project Manager's Competence on Project Success: The case of selected Ethiopian Companies' submitted in partial fulfillment of the requirements for the degree of Master of Arts in Project Management complies with the regulations of the university and meets the accepted standards with respect to originality and quality.

Name and signature of Members of the Examining Board

Name	Title	Signature	Date
1._____	Advisor	_____	_____
2._____	Examiner	_____	_____
3._____	Examiner	_____	_____

Abstract

The impact of competence of project managers on project success of three selected Ethiopian companies-Elmi Olindo Constructors PLC, Ethiopian Airlines Group and International Livestock Research Institute is assessed. To achieve the objective of the research explanatory research design and quantitative research method are applied. Five point Likert scale questionnaire was administered to gather data from each organizations and managed to collect 52 responses. However, only 43 of them are considered for assessment as the remaining ones are found to be outliners. Three project managers' competences -knowledge, skill and personal characteristics- were used as explanatory variables for project success. Correlation and regression analysis was performed to achieve the research objectives. The correlation analysis revealed a positive moderate correlation between the independent and dependent variables. The result of the regression analysis also showed that project success is affected by the three mentioned competence variables; personal characteristics have the highest weight followed by skill and finally knowledge. The joint effect of the independent variables considered in the model has brought a 37% change in project success. Even though the study outcomes show projects managers' competence has an impact to project success, it is not to the highest effect. This may resulted from limited number of companies incorporated in the study and competence variables considered. Thus, future studies may increase their scope to comprise variety of organizations and additional competence variables.

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Acronyms

PM: Project Management

ET: Ethiopian Airlines

Elmi: Elmi Olindo Contractors PLC

ILRI: International Livestock Research Institute

PMI: Project Management Institute

PMBOK: Project Management Body of Knowledge

PMCD: Project Management Competence Development

IPMA: International Project Management Institute

ICB: IPMA Competence Baseline

IT: Information Technology

SPSS: Statistical Package for Social Science

COVID-19: Corona Virus 2019

CHAPTER ONE: INTRODUCTION

1.1 Background

Project is a temporary endeavor in which specific resources are committed within a given time frame, to create unique product, service, or result over an extended period of time in expectation of benefits that exceed the committed resource. This implies that projects involve change, the creation of new or different things with a beginning and an ending time interval. Construction of Pyramids of Giza, publication of a children's book, human beings landing on the moon, commercial software applications, and different researches can be mentioned as an outcome of projects. The outcomes of these projects were the result of leaders and managers applying project management practices, principles, processes, tools, and techniques to their work (PMI 2017).

Project management is about making dream come true. Project management provides people with a powerful set of tools that improves their ability to plan, implement, and manage activities to accomplish specific organizational objectives. But project management is more than just a set of tools; it is a results-oriented management style that places a premium on building collaborative relationships among a diverse cast of characters (Larson et al. 2011).

A project manager is an individual who is in charge of the project to initiate, plan, design, execute, monitor, control and closure of a project. They must ensure that appropriate trade-offs are made between the time, cost, and performance requirements of the project. (Larson et al. 2011). The project manager must have a combination of skills and attributes though it depends on the type of the project. Project management concerned with both people and technical aspects. Project management involves understanding the cause-effect relationships and interactions among the sociotechnical dimensions of projects. Improved competency in these dimensions will greatly enhance project managers' competitive edge.

Now day's project managers manage their projects in a fast-changing context with many interested parties and external influencing factors in addition to the complex and varied nature of the project itself. The project manager, thus, needs to have competencies which range from technical to behavioral competency to deal with the overcoming challenges of changes.

The Project Management Institute (PMI 2007) on PMCD Framework identifies three different competency dimensions: knowledge, performance and personal. Knowledge competence is the

process, tools and technics the project manager knows to perform the projects activities. How the project manager applies these knowledges referred as performance competence. The attitudes and core personality characteristics of the project manager towards the routine of the project can be referred as a personal competence.

The IPMA Competency Baseline (ICB 2006) states competence as a collection of knowledge, personal attitudes, skills and relevant experience needed to be successful in certain functions which are further broken down into three competence ranges. The technical competence range, behavioral competence range and contextual competence range.

Traditional measurements of project success focused on meeting the timelines and budget goals of a project. Which is called triple constraint or iron triangle. This view of project success has become common and even universal. However, project success is also defined in a broader way. Although the measurement of project success has focused on the tangible in the past, current thinking is that success is not only about being completed in schedule and budget goals, it can also be expressed in achieving beneficiaries, stakeholders, donors or funding agencies expectations. However determining these measurements of success is more difficult as some can only be evaluated years after the completion of the project. (Serrador, 2014).

Project management knowledge, skills and other personal competences like behavior, attitude, and personality characteristics are competences what project managers need to own to accomplish the project objectives and goal. It is generally accepted that there is a causal link between project manager competency and project success as stated on PMCD framework of PMI 2017.

Project management is all about people, and we are struck by the enormous complexity of interests, styles, approaches, and interactive dynamics that are unleashed when we attempt organizational project work. Each day brings new challenges, unheralded actions, and innovations. The competent project manager integrates key people, organizational, and technical skills. Success in any environment largely depends upon completing successful projects, and thus successful projects are done by skilled project managers and teams, who possess appropriate competencies. (Englund R. and Bucero A. 2012). Therefore, this project work is conducted to assess and understand the impact of the knowledge, skill and personal characteristics

competencies of project managers on project success in the aspects of schedule, budget, and quality.

It is observed that there are few number of literatures which have studied the relation between the three mentioned components of the project manager competencies (Skills, Knowledge and personal characteristics) and its impact on the project success, and most of them do focus on construction projects. Project managers' leadership style is one of a common factor that affect group's performance in a project as he/she is one of the key personnel with as main role in any type of projects.

The aim of this project work is to assess the effect of project managers' competence on the project success in three successful companies with different nature of projects. Ethiopian Airlines group on IT projects, Elmi Olindo Contractors PLC on construction projects and International Livestock Research Institute (ILRI) on livestock and rural development related research projects.

1.2 Statement of the Problem

These days in our county project managers are being assigned from functional mangers or technical experts who have knowledge competencies of the work to be performed, giving little or no consideration to other project manager competencies like the skill on how to apply their knowledge and personal characteristics competence. (Rainsbury *et al*., 2002) indicated competencies are often studied by individual attributes like skills, knowledge and attitudes, which perform tasks. These competencies should be recognized enough to develop personnel's performance or else will eventually have a destructive effect on competitiveness of the organizations. In Ethiopia major government projects that cost billions of dollars have failed due to inefficient and unprofessional management. For instance, 73% of government sugar projects were not realized and none of the 10 sugar factories have become operational, which were mainly managed by people of no knowledge of project management. As another evidence, Development Bank of Ethiopia's 2012 report revealed only 29% of the projects financed by the bank were categorized as successful while the remaining 71% were in the failure category. Currently, most mega public construction projects suffered from unmanaged project planning, operation and function. Construction projects schedule slippage reaches up to 80%, and the rise of cost than planned ranges up to 40% (Ayalew et al. 2016). People's competency is given less

attention to the Ethiopian construction project management environment (Snesilassie, Tabish and Jha, 2017).

As the reality of the country's project success rate evidences, it urges to investigate and take swift amendment on the problems. Project manager's competence is among the major issues come upfront to be addressed in assessing a given project success or failure. This research work selected three companies from different background but with long history in successful project management to examine the effect of project manager's competence in project success.

1.3 Research Question

This study addressed the following research questions.

How project success is affected by:

- knowledge competences
- skill competences
- personal characteristics of a project manager.

1.4 Research Objective

Evaluating the impact of project managers' competence on project success of ILRI, Elmi and ET on research, construction, and IT projects respectively.

On the other hand, the specific objectives are to evaluate the effect:

- Knowledge competence of a project manager on project success.
- Skill competence of a project manager on project success.
- Personal characteristics of a project manager on project success.

1.5 Significance of the Study

The significance of this project work is to enrich the concept of project managers' competence on the three stated organizations with variety project types and their project managers' competencies by exploring the existing association with project success.

This project work tried to conduct a profound analysis of the three variables of competence of the project manager and evaluate their impact on successful completion of the project. It makes

an effort to show the sights how project managers in different industries exercised these competencies based on their contribution towards project success.

The result may also encourage other researchers to conduct further study with additional variables and more variety of project types to come up with a better outcome.

1.6 Scope of the Study

Project manager's competence can be a broad topic to research and its elements can be analyzed in to number of perspectives. For instance Cartwright and Yinger (2007) have mentioned abilities, attitudes, behavior, knowledge, personality and skills as components of competencies. In this study knowledge, skill and personal characteristics are analyzed to evaluate the projects managers' competence in relation to project success in three companies- Ethiopian Airlines group (ET), Elmi Olindo Contractors PLC and International Livestock Research Institute (ILRI). These companies are from public, private and international sectors with long and vast acquaintance with various projects and successful accomplishment.

Even though project success can also be expressed in achieving expectation of different stakeholders, it is more difficult to determine project success in this term as same can be evaluated with is some length of time after the completion of the project (Serrador, 2014). Therefore, this study considers the traditional and the more common measurement of project success which is called the Iron Triangle (cost, time and quality).

1.7 Limitation of the Study

This project work considered project managers' competence in terms of knowledge, skill and personal characteristics. It would show the better effect if it considered other variables of competencies and more companies with different project types. As most of project managers of ILRI and Elimi are located at different parts of the country outside Addis Ababa, having a face-to-face discussion and an interview was difficult thus the data collection is conducted only by questionnaires.

The current outbreak of COVID-19 was another limitation as most offices are working home based or on annual leaves, it hinders the data collection process.

1.8 Definition of Terms

Project: MPI (2017) define project as a process of creating something new in a temporary endeavor.

Project Manager: is an individual assigned by the organization that is responsible for achieving the project objectives by leading the project team. (PMI, 2017)

Project Managers Competence: is the combination of observable and measurable knowledge, skills, abilities and personal attitudes that contribute to enhanced one's performance and ultimate result in project success (Crawford, 2007).

Knowledge competence: is the cognizance of fact, truths and principles gained from formal training and or experience (https://hr.unl.edu/).

Skill competence: is a developed proficiency or dexterity in mental operations or physical processes that is often acquired through specialized training, the execution of these skills results in successful performance (https://hr.unl.edu/).

Personal characteristics competence is defined as the core personality characteristics underlying a person's capability to a job such as personality traits, attitudes and behaviors (Bakhsheshi & Nejad 2011).

Project Success: Kerzner (2009) define project success as the completion of activity within allocated time period, budgeted cost and at the specification level, with acceptance by the customer/user.

1.9 Organization of the Study

There are five chapters in this project work. Chapter one contains general introductory of the study. Chapter two covers a relevant literature review. The methodology and procedures used for data collection and analysis are presented in chapter three. Chapter four incorporate the analysis and interpretation of the collected data. Chapter five, finally, presented conclusions and recommendations grounded on the observations and results from the study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview

Here literatures related to project managers' competence and its effect on the project success are reviewed. It also discussed previous researches so as to have conceptual framework. In order to understand the theoretical background of the subject matter various articles are also searched. Project, project management, project manager, project manager competence, knowledge, skill, attitude, and project success are key words to search the literatures.

2.2 Project and Project Management

PMBOK Guide, 2017 define project as a process of creating something new in a temporary endeavor. Which can be further illustrated as project to be temporary it indicates that it has a definite beginning and an end, with in which it is undertaken to meet its objectives by producing deliverables referred as a unique outcome. The outcomes of these projects were the result of leaders and managers applying project management. Application of skills, knowledge, tools, and techniques to the project activities is a main process of project management to achieve the requirements that are predefined. Project management is realized through application and combination of the project management processes identified for the successful execution of projects.

James Lewis, 2010 mentioned Dr. J. M. Juran's saw, that stated a project as a problem that is scheduled for solution. Problem as stated have negative and positive aspects like cleanup an environment and developing a new product can be exemplified respectively. Thus, projects are conducted to solve these kinds of problems for organizations. Project management deals with tools, people, and systems. Tools with appropriate processes and systems can be considered sufficient condition for success in managing projects as people engage in these processes. Projects are People, and project management is about dealing with people and getting the best possible performance from them.

A project can be defined as an activity which consumes resources for the achievement of a specific objective with in a predetermined time interval. Project management can be defined as the process of controlling the achievement of the project objectives (Muhammad, 2017).

Utilizing the existing organizational structures and resources, it seeks to manage the project by applying a collection of tools and techniques, without adversely disturbing the routine operation of the company. The function of project management includes defining the requirement of work, establishing the extent of work, allocating the resources required, planning the execution of the work, monitoring the progress of the work and adjusting deviations from the plan.

Project management is a professional and scientific specialization that differs from traditional management by the generally limited, temporary, innovative, unique, and multidisciplinary nature of projects—it is widely recognized that project management requires its own tools and techniques. In an unpredictable, complex and shifting environment, projects offer organizations a way to be a competitor in the industry.

A project is a temporary endeavor performed for the achievement of a specific objective, which could be defined in a change resulted in benefits. A project is considered successful when it is accomplished per the predetermined acceptance criteria, within the schedule and budget. An application of knowledge, skills, tools, and techniques for the achievement of project objectives can be referred as a project management. The focus on people, product, process and project is a key to successful project management. It is synergy of these four Ps working together that yields the successful management of projects.

A project is defined by Turner (2009) as a temporary organization to which resources are assigned to do work to deliver beneficial change. He previously, 1998, defined project as an endeavor in which variety of resources are allocated to undertake a unique scope of work, of defined requirement, with a cost and time constraints to achieve beneficial change.

Projects are ad hoc, resource-consuming activities used to implement organizational strategies, achieve enterprise goals and objectives, and contribute to the realization of the enterprise's mission. An early definition of a project stated that it was "an undertaking that has definite final objectives representing specified values to be used in the satisfaction of some need or desire (Cleland. et al 2002).

A project is also defined as a series of activities which are unique and complex, performed with in specific time, within budget, and according to specific action for the achievement of a common goal. (Wysocki, 2014). It is further defined as a sequence of finite dependent activities

whose successful completion results in the delivery of the expected business value that validated doing the project from business perspective. Wysocki (2014) also define project management as an organized common-sense approach that utilizes the appropriate client involvement in order to meet sponsor needs and deliver expected incremental business value.

2.3 Project Manager and Their Competence

As per the definition on PMBOK (2017), the project manager is an individual designated by the project organization who is in charge achieving the project objectives by leading the project team. The project manager plays a vital role in the leadership of a project team so as to achieve the project's objectives and stakeholders' expectation with in the pre specified time, cost and quality. Research shows that project managers consistently and effectively use their knowledge, certain essential skills while displaying a positive attitude to successfully lead the project.

The project manager is in charge of managing the project needs to have competences in dealing with scope, schedule, finance, risk, quality and resources aspects of the project. As project managers participate in such different aspects of the project, they are given the power and authority to forecast, establish, and maintain project results. Their proactive involvement in the processes, as well as their "contribution to the corporate bottom line, make the project management discipline a twenty-first-century core business process" (Zaval & Wagner, 2011). Project managers can come from different backgrounds and therefore possess different skills. Whereas some are chosen for their superior technical skills, others land a project manager position through their good managerial and leadership skills. There are also those who are prepared to be project managers because they went to school and studied the topic. In today's complex project environments project managers' require competences for accomplishing successful projects.

According to Sanghi (2004), competence refers to a combination of related skills, knowledge, and attitudes that influences someone's activity that can be measured against pre-defined standards and which will be improved through learning. The term "competency" has also been defined in the literature as a combined effect of skills, knowledge, abilities, and behaviors on success. In this study, we have taken a broad view of competency, as have others: skills,

attitudes, knowledge, and personal characteristics that can be improved with experience, education and training.

Technical area expertise, project management application, general management, understanding of the project environment, and interpersonal skills are referred as project manager's competencies as mentioned in PMI (2004). These competencies are also organized as project management knowledge competence, performance competence, and personal competence on project manager competency development framework (PMI, 2017). Project management competence is defined as the knowledge that project managers bring to a project or project-related activity and their understanding of the project management's discipline, experience and skill in the application of this knowledge, and core attitude and personality traits that affect their behaviors. IPMA, on the other hand, defines competence as a collection of knowledge, personal attitudes, skills and relevant experience that is needed to successfully perform a certain function (Caupin et al. 2006).

The project manager must understand generally accepted project management skills, such as managing project scope, time, cost, quality, and so forth. The project manager has specific accountability for achieving the entire defined project objectives within the time and resources allocated. The project manager performs the day-to-day management of the project and thus need to have proven skills, knowledge and experience proportionate with the complexity, size and risk of the project.

Alternatively, ICB states that people, practice and perspective competencies are the elements of project management competence (IPMA, 2015). Crawford (2014) argues that, although there are four generally accepted dimensions, namely, skills, knowledge, personal characteristics and experience. Bredillet et al. (2015) identified core personal characteristics, knowledge and skill as a key dimension of cempeteces. Even though this is analogous with Crawford (2014) view, Bredillet et al. (2015) view experience as a component of skills, while Petter and Randolph (2009) see experience as a component of knowledge and skills. This project work thus focuses on the three competence dimensions, namely, knowledge, skills and personal characteristics.

2.4 Elements of Project Managers Competence

2.4.1 Knowledge Competence

Knowledge refers to awareness of or familiarity with various objects, events, ideas, or ways of doing things. Knowledge is a fundamental factor behind a project manager's success. Knowledge can be defined as facts and information which is known in a particular field. There are different approaches to follow in pursuit of knowledge. The technocratic model is referred as the dominant approach to pursuit knowledge. This approach comprises of three stages; acquisition of the profession's fundamental knowledge base, relating this knowledge to cases and puzzles, and finally applying it through some form of supervised practice or internship (Lester 1995).

As per Mnkandla & Marnewick (2011) knowledge has two forms, explicit and tacit knowledge. Explicit knowledge is primarily acquired through education, thus focuses on facts around aspects such as material properties, technical information and tool characteristics. Tacit knowledge is obtained by internal individual processes, such as experience, reflection and internalization or individual talents. Project managers' competence is determined by the knowledge they exhibit.

Project managers can gain explicit knowledge far simpler than tacit knowledge as mentioned. Knowledge around project management concepts is a prerequisite for project managers. Formal project management standards and methodologies form the foundation of this knowledge (Bredillet et al. 2015). This mainly includes PMBOK® Guide stated project management knowledge areas. Formal standards and methodologies provide the basis for project management concepts as extensive detail is given for each process area, including the inputs, outputs as well as tools and techniques. Project managers can learn the various project management concepts by simply reading these documents. It is also important that project managers have knowledge regarding the tools and techniques which can be used during a project. Having knowledge of tools and techniques on the 10 project management knowledge areas assist them in managing a project more effectively and efficiently. Knowledge relating to the organization should also be known and understood by the project manager. Understanding business processes as well as the policies which govern them will provide the project manager with relevant knowledge during the project's life cycle. A lack of understanding could have a negative influence on the project as well as the organization's day-to-day operations. Alternatively, project type knowledge would also be beneficial to a project manager. For example, construction projects differ from

information systems projects. Construction projects require extensive knowledge around structural integrity whereas information systems projects require technology knowledge relating to hardware and software.

Tacit knowledge is far more difficult to articulate than explicit knowledge. Project managers with extensive experience often become subject matter experts with regard to project management as they have worked on a multitude of projects, great and small. The knowledge gained over the years translates to an essential ability to manage projects. Furthermore, this directly influences their soft skills. For example, the experience improves their skills in areas such as decision-making, problem solving and leadership as the exposure will provide guidance on what to do under certain circumstances. Although a beginner could read up on the aforementioned skills, only experience and exposure can truly develop these skills (Petter & Randolph 2009).

2.4.2 Skill Competence

Skill is learned capability to perform an activity developed through organized, deliberate and continuous effort to easily carryout multifaceted activities or job functions involving ideas, things, and/or people. It can also be defined as the proficiency or dexterity that is acquired or developed through training or experience (El-Sabaa 2001). The skill set of a project manager includes technical knowledge, leadership skills that underlie the project manager's behavior to affect the project team positively in favor of project development, managerial skills and administrative skills (Kosaroglu & Hunt 2009). Petter & Randolph, 2009 classifies project management skill in two technical and soft skills. Understanding the techniques and tools and an ability to apply them to projects and are primarily developed through training and experience (El-Sabaa 2001). On the other hand, delegation of authority, team work and decision making are amongst others which are categorized as soft skill.

Technical skills such as the application of various techniques, tools and business methods can be gained through training and continuous development schemes. Such skills can be attained, for example, through certifications such as the PMI's Project Management Professional (PMP) certification. Considering that computers form a fundamental component of organizations today, it seems logical that computer usage skills are required as a project management competence, as

this could arguably make the activity of, for instance, planning and organizing simpler. Understanding business methods could also be a skill acquired through experience which corresponds to the view that experience is a component of the skills dimension (Bredillet et al. 2015).

Ability to lead, communicate, negotiate and the ability to solve problems can be mentioned as relevant soft skills to a project manager (EdumFotwe & McCaffer 2000). Communication skill is one of the most important skill as managing projects requires interacting with different stakeholders and also involves multinational and multicultural project teams . Given that project managers are responsible for managing and directing the various resources required for a project, it is imperative that they are competent decision makers and problem solvers. As obstacles are inevitable during projects, project managers will often have to make tough decisions to ensure the project continues its set path. These decisions have multiple implications such as, amongst others, impacting the schedule, budget and even business operations both in the short and long term. It is thus imperative that the project manager can solve problems as quickly as possible to reduce, mitigate or avoid severe implications.

2.4.3 Personal Characteristics

Personal competence is defined as the core personality characteristics underlying a person's capability to a job such as personality traits, attitudes and behaviors. Unlike previously it is believed that personal characteristics play an essential role in project management (Bakhsheshi & Nejad 2011). Effective and efficient management of projects directly influenced by personal characteristics.

Initial impression of the characteristics shows that they are comparable to soft skills. Although, certain soft skills can be learnt from experience, others are natural to the individual. The most prevalent characteristics revolve around people interactions which corresponds to the perception that project management is predominately a people management discipline (Fisher, 2011).

Leading and motivating project teams is often an issue for many project managers. Team members go through phases where they are reluctant or demotivated to continue working on a project. A project manager must, therefore, continuously motivate the team to ensure the project is delivered as requested. Team building exercises are also considered essential prior, during and

after a project. The aim is to ensure teams understand one another about their various strengths and weaknesses, as this will allow them to work more effectively with each other. Furthermore, team building also strengthens relationships between members which facilitate improved communication and collaboration between them.

Thinking and judging are the two most important characteristics for project managers. This is logical as project managers are required to, amongst others, make decisions, solve problems as well as manage people and resources. Project managers can be both introverted and extroverted implying that a sociable individual is not necessarily the best individual for the job. Bevilacqua, Ciarapica, Germani, Mazzuto, and Paciarotti (2014) did however discover that extroverted managers deliver projects with less delays and less wasted time while introverted managers tend to waste time by "over-processing".

2.5 Project Success

PMBOK (PMI, 2017) stated that one of the most common challenges in project management is determining whether or not a project is successful. Traditionally, the project management metrics of time, cost, scope, and quality have been the most important factors in defining the success of a project. More recently, practitioners and scholars have determined that project success should also be measured with consideration toward achievement of the project objectives. Kerzner (2009) define project success as the completion of activity within allocated time period, budgeted cost and at the quality level, realizing the predefined acceptance criteria by the customer and/or user in line with organization culture.

Pinto and Slevin (1988) argue that a project success should be measured by three criteria: technical validity, organizational validity and organizational effectiveness. First, a project should be technically correct. Second, the project should solve the clients' needs and problems. And, finally, the project has to be used after its implementation, bringing positive impact for its users.

Shenhar and Dvir (2007) proposed a framework to achieve project success using five dimensions:

- **project efficiency**, which determines if a project was completed on time and within the budget;
- **impact on the customer**, assessed by how the project's product impacted the customer's life and business as well as how the project results addressed the customer's needs;
- the **project impacts on its team members**;
- **business and direct success** by evaluating the project's impact on the organization; and
- **preparing for the future**, reflecting on how the project results will help the organization to construct competitive advantage and engage in future endeavors.

Over 50 years Iron triangle is used in project management for measuring project success. Cost, time and quality is a closely related, and change of one effect on the other. Simply completing the project by the given due date and within budget is not sufficient, because the project must also be of acceptable quality. In today's world with a distinct competitive in the business world, the quality is perhaps the most important element of competitive fighting. One of the biggest problems of project managers is to harmonize project cost, time and quality. It is difficult to achieve this because cost, time and quality are related in the way that a change of one influence on the other two. Project managers typically try to balance the three when meeting project objectives, but they may make trade-offs among the three during project implementation in order to meet objectives and satisfy customers. There are many examples in practice that projects were delivered on time and within budget but failed to meet the expectations of end users.

Perhaps the most well-known measure of success criteria in projects is the 'Iron Triangle' that places cost, time and quality at the center of project success. However, projects that are delivered on time, within budget and meet scope specifications may not necessarily perceived to be successful by key stakeholders (Shenhar and Dvir, 2007). Though it is undyeable that the three constraints have dependency to each other: an attempt to increase as quality will certainly resulted in an increment of time and cost. A decrease in quality may resulted from a tight time schedule which consequently increases the cost (Morris and Sember, 2008).

Project Time: is about completion of the project with in the allocated time period. Project time management is based predominantly on planning, and then it's all control and execution. Planning for project schedules may stem from deadlines, customer demands, hard and soft logic,

and a bit of prediction. The most common cause of bloated project budgets is lack of schedule management.

To determine the time needed for the project we must first define the time required for implementation of each activity of the project consists of. Any project can be broken down into a number of tasks. To prepare the project schedule, the project manager has to figure out what the tasks are, how long they will take, what resources they require, and in what order they should be done.

Project Cost: Project cost management includes processes involved in estimating (approximation of the financial resources needed), determining budget (combining the estimated costs to form cost baseline), and controlling costs (managing variances to the cost baseline while watching the project status) for completion of the project within the approved budget.

Costs are important for organization and from competitive point of view. All organizations keeping and improving quality and seeking to reduce their costs. But this is very difficult to achieve in the same time. It is because quality and costs are related. The sources of cost of quality are: failure (internal and external), prevention, and appraisal (Kenneth, 2005).

Project Quality: Quality is defined as the degree to which a set of inherent characteristics fulfill requirements by PMI, 2017. The set of inherent characteristics may be a product, processes or system. The requirements may be those of customers or stakeholders, an important group that is ignored at great peril to the success of the project. Quality incorporates the process of the performing organization that determines the objectives, quality policies and responsibilities so as to satisfy the needs for which the project was undertaken. It implements the quality management system through policy and procedures with continuous process improvement activities conducted throughout the project as appropriate.

Once a project has been completed, the time and cost tradeoff problem is no longer an issue for the project manager, and quality or performance becomes key issues. Before a project manager can plan for quality, he must know what the quality expectations are. As part of the quality management, the project manager and the project team must identify the requirements of planning, determine how the requirements may be met, and identify the costs and time demands

to meet the identified requirements. If the outcome of a project meets or exceeds the set expectations, the project is deemed successful.

One of the key principles of project quality management is that quality is planned in, not inspected in. Planning for quality is more cost-effective than inspecting work results and doing the work over, or correcting problems to adhere to quality demands. Customer satisfaction, cost reduction, increase in productivity and competitiveness are some from benefits of quality management in projects.

2.6 Relationship between Project Managers' Competence and Project Success

There are a number of factors which impact whether a project will end in success or failure. Project management competence is an important factor which frequently arises. The concept is that does the success of a project as well as an organization got directly influenced by the competences of their project managers. It is believed that 'picking the right project manager is a key to project success' (Crawford et. Al 2005). However, limited studies were conducted to institute the association between competence and project success. The importance of competence is thus questionable until its role is fully understood.

Cohen et al. (2001) examined how a project manager contributes to the overall success of a project as well as an organization. An argument was made that a competent project manager should have the relevant skills and knowledge to successfully support and drive initiatives in organizations from projects to business success.

Project management competency consists of three dimensions, namely skills, knowledge and personal characteristics. Bredillet et al. (2015) argue that it is unethical for project managers to claim they have all the required skills and knowledge, yet projects continue to perform dismally. It is the project managers' duty to ensure they are adequately proficient in project management to ensure projects perform successfully. Each dimension does not operate in isolation as they are inexplicably interrelated as previously discussed. Personal characteristics support and enable both technical and soft skills. Personal characteristics also support and enable the generation of explicit and tacit knowledge, as project managers should crave acquiring knowledge throughout their careers. Explicit and tacit knowledge form the foundation of technical skills in particular and help in improving soft skills. The three dimensions work together in developing project

management competency. Improved project success should be realized when the appropriate project management competency has been attained. Improving project success subsequently allows organizations to realize strategic goals and overall organizational success.

2.7 Empirical Studies

Some former related studies were explored to build up the topic. Therefore, this section includes local and international studies that show relationships among project managers' competencies and project:

Abay (2019) stated competencies of an effective project manager have been increased through time and change. The belief that project managers' technical skills and human skills have the most influence on project management. Technical skills have been the most crucial project managers' competence. These skills help the project manager to be a competent and a main contributor for the project success as well as company growth. It was also mentioned that leadership as the most relevant project managers' competence which influences success of project.

Abebe (2017) pointed out that soft competences like leadership, team working, conflict handling, problem solving, creativity and innovation and stakeholder relationship management skills and the top hard competencies include project cost, time and scope planning, implementation management, project success management, and risk and change management. It also showed that both hard and soft competences are important and lacking of them could compromise the project success.

Nigatu (2019) stated that all competence variables, which are knowledge, skill and attitude, does significantly affect the success of a project. When we ranked the significance of these three mentioned competences of project manager it is shown as skill, knowledge and attitude.

Yared (2018) showed that most condominium housing construction projects are unsuccessful because of the poor management competency, due to this fact most profession has moved past the idea that the most competent project manager is the one with a greater technical ability. The efforts made by different researchers of the field to define the skills and characteristics of an effective project manager have been increased through time and this change. The belief that

beyond a project manager‘s technical skills, human skills have also been the most influence on project management. On the other hand, technical skills have been the most crucial project manager‘s skills. These skills help the project manager to be a competent and a useful figure for the project as well as company growth.

Abebe K. (2017) stated that both hard and soft competences are important and so it should be emphasized that lacking soft competences could compromise the project success but also hard competencies are more important for technological projects like e-CAF project. It is identified that hard and soft competences desired by project managers for successful project implementation.

Nesbit (2009) has analyzed and discovered the supplementary skills that project managers necessitate to complete the project successfully in addition to technical project management skills. Leadership skill, people skill, team management and awareness of the political environment are supplementary skills in the project as reviewed in the literatures. The ability of these additional skills was incorporated in requirements of project manager position in information technology sector. The study concluded that the qualifications in relation to information technology include these additional skills.

Lei and Skitmore (2004) explored real life skills and experiences of project managers, to investigate what the project manager requires as most important project management skills. Ability to meet project objectives, communication and decision making are the most important skills identified in the study. Communication skill is the gap between what the project manager requires and possessed. These skills of project managers’ were found to be made up of industrial relations, safety and health of the workplace, environmental issues, innovation, stakeholders’ management, coaching, client handling, business and networking skill.

Sunindijo and Zou (2011) conducted to propose required skills to be applicable in the construction industry examining 16 previous studies on project manager skills. Conceptual, human, political, and technical skill (CHPT construct) are identified as four essential skills for construction project managers for better performance. This research also discusses components that constitute these skills and their importance for construction project managers. In this study political skill is stated as a key finding of the study essential to construction project managers.

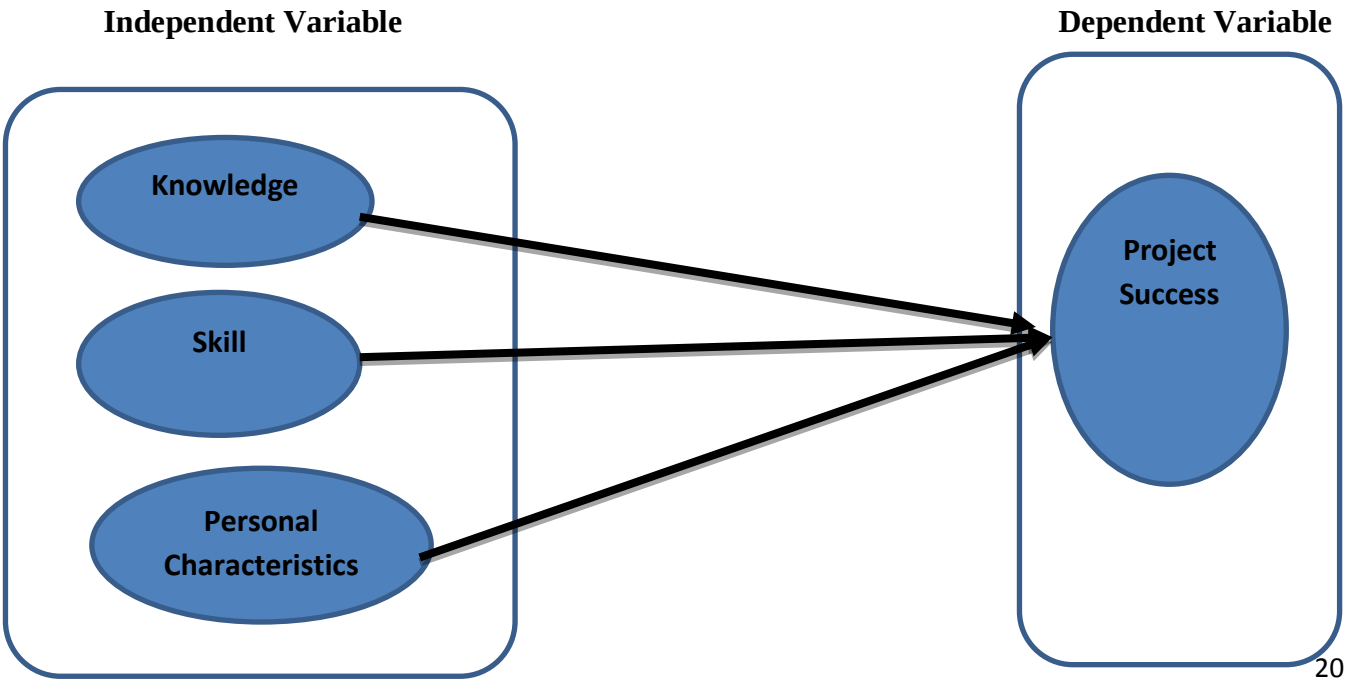
Briere, et. al. (2015) intended to identify competencies of project managers in international development companies and how they practice these competencies. On the study conducted on 28 project managers 11 competencies were identified. Namely adaptability, people management, communication, individual qualities, social skills, leadership, integrity, local network, knowledge, capacity development, and transformation management. The study also strained the significance of these competencies in project management.

From these different studies it can be suggested that project managers' competence play critical role in project success and lack of necessary competencies may lead to possible project failure.

2.8 Conceptual Framework of the Study

Different research (Capin et al. 2006); Crawford 2005; Müller and Turner (2009)) expressed competence as a combination of personal characteristics, skill and knowledge used to perform a defined activity. Therefore, this study considered knowledge (understanding the subject matter, planning and scheduling, cost and risk management and the like), skill (leadership, decision making, communication, motivation, team building, problem solving) and personal characteristics (attitudes, personal traits, flexibility and adaptability, honesty) as an independent variable; and ,in the eyes of the iron triangle (cost, quality and time), project success considered to be dependent variable

Figure 2.1 Conceptual Framework of the Study



CHAPTER THREE: RESEARCH METHODOLOGY

3.1. Overview

In this chapter, the methodology employed by the researcher is presented. It contains the research design, source and type of data, gathering instruments, target population, sampling design, method of data analysis and presentation, validity and reliability of the data and finally ethical consideration of the project work.

3.2 Research Design

According to Saunders, Lewis and Thornhill (2009) research design is the general plan of how the researcher will go about answering the research questions. The research design applied for this project work is explanatory research design as the main objective of this research is to study the effect of project managers' competencies on the success of a project. Marczyk et al (2005) recommends explanatory research design to studies which involves fact finding enquiries and reporting of what has happened or what is happening.

3.3. Type and Source of Data

The study employed primary sources of data. Furthermore, company manuals, project reports and other related materials are referred that are believed to strengthen the achievement of the research objectives.

3.4. Data Gathering Instrument

In order to gather firsthand information questionnaire were prepared and administered as an instrument of data collection. Owens (2002) suggests use of questionnaires to attain huge number of respondents, convenience and by its privacy aspect for the respondents. Therefore, it is selected as an instrument to collect data.

Data collection is done through questionnaire modified from Ahmed Al-Khawaldah, (2017) and Nigatu, (2019). As reviewed on different research works, adopting the survey questionnaire than of constructing a new one does assist in obtaining a concrete finding. Therefore, the questionnaire was modified to suit the selected organizations to conduct the study.

3.5. Population of the Study

A target population is the collection of those people, events and records with the desired information for the research study from which a sample is taken (Saunders, Lewis and Thornhill. 2009).The researcher incorporated three companies in the project based on convenience for the researcher, willingness of the companies to corporate, long player in the sector and being successful in accomplishment. Elmi Mundo has more than 70years of experience in the construction sector and participate in various projects including ET projects; ILRI is a non-government international organization with more than 30years experience in research and implementation. Ethiopian Airlines group is one of, if not the only one, government organization set as example to manage success in its various projects. Hence, these three organizations are included in the research work aiming to achieve the research objectives.

project managers and section heads who were involved in project management were target population. 60 questionnaires, 20 for each were disseminated to staffs selected randomly from each of the three organizations.

3.6. Method of Data Analysis and Presentation

The collected data was analyzed using quantitative data analysis method. The data obtained using close ended questionnaires was analyzed using SPSS (Statistical Package for Social Science) software package in order to obtain descriptive analysis of the data. To summarize the responses frequency, percentage, mean and standard deviation were used. Results are presented in tables to make them comprehensible.

Correlation and regression analysis were also done by the help of SPSS. The Correlation analysis is done to point out the degree of association between the dependent variable and each independent variable. Linear regression analysis is performed to show the effect of the dependent on the independent variable.

3.7. Validity and Reliability

The study is done in three organizations which practice projects as a way of achieving their organizational goal. Equal number of questionnaires were distributed in each organization in order to have valid representation and equal input on the result. The questionnaire was prepared

in an effortlessly understandable way to the respondents so that the required information can be gathered so as to increase reliability of the ultimate findings. The questionnaire is adjusted in a context that assured applicability in the three organizations. In addition, it is evaluated and approved by the research advisor for the content of its validity.

3.8. Ethical Consideration

In this project work preparation, the ethical confidential documentation was implemented & taken in to account during the overall process. All the documents used during the preparation of this project work will only be used for the accomplishment of this paper. Moreover, there is no personal interest and the project worker will act professionally.

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS & INTERPRETATION

In this part the results of data analysis are presented accompanied by their discussion. Tables, mostly, are used to summarize the analysis results.

From 60 questionnaires sent, 52 of them were responded. From 52 collected responses one overrated and eight under rated responses which made the collected data not normally distributed are excluded. Thus the responses which are considered for analysis are decreased to 43 which is 71.67% rate of response. A response rate of 70% and over is presented as excellent according to Mugenda (2003). Therefore, this response rate is found to be sufficient to conduct the analysis. Five scales ranking i.e. Linkert scale; where 5 represents Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree and 1 strongly disagree is used to develop adopted questionnaire. Statistical software SPSS *version 23* is used to analyze the date collected. Since the questionnaires were prepared using Google Form application, the researcher has made all questions "required" which means the respondents can't leave any questions unanswered. Therefore there are no any missing values.

4.1. Demographic Characteristics of Respondents

4.1.1. Gender and Age Distribution

From the collected data it is observed that higher number of respondents are male (n=35, %=81.4%) and few female respondents (n=8, %=18.6%). This indicates that there is lower number of female project managers than male in the three organizations. Furthermore, greater number of the respondents are in the age interval of 30 – 40 group, male respondents (n=26) and female respondents (n=5), which represents 72.09% from the total. In general, 83.72% of the project managers are found to be under the age of 40 that indicates that most of the project managers in the organizations are young. This can be considered as benefit for these organizations as young professionals are considered to be easily flexible to accept changes and willing to deal with new business opportunities.

Table 4.1 Gender of respondents by Age Group

Gender	Age			Total
	20 - 30	30 - 40	Over 40	
Female	3	5	0	8
Male	2	26	7	35
Total	5	31	7	43

Source: Own survey, 2020

4.1.2. Level of Education

As can be seen in the table (4.2) below, there is almost equal number of respondents who have Bachelor's (n=22, %=51.16%) and Master's degree (n=21, %=48.84%).

Table 4.2 Educational Level of Respondents

Level of Education	Freq.	%age
Bachelor's Degree	22	51.16
Master's Degree	21	48.84
Total	43	100

Source: Own survey, 2020

4.1.3. Project Size

Table 4.3 shows that most of the respondents, 34.88%, have managed intermediate projects, followed by very large (n=12, %=27.91%) and large (n=11, % =25.58%) projects. This shows that most of the respondents are well educated and experienced enough to manage highly budgeted projects which higher management of organizations and owners need it to be well managed and successful. It is also found that 5 project managers who represent 11.63% of the total respondents managed small projects.

Table 4.3 Project Size managed

Project size	Freq.	%age
Small	5	11.63
Intermediate	15	34.88
Large	11	25.58
Very Large	12	27.91
Total	43	100.00

Source: Own survey, 2020

4.1.4. Experience as project manager

As shown in the below table most, 65.12%, of the respondents have an experience of 5 to 10 years in managing projects. 18.60% of the respondents have worked as a project manager for more than 10 years and 16.28% from the total have an experience of less than 5 years. This implies that most of the project managers are youngsters who serve their organization less than 10 years thus have more probability to more serve for extended number of years remain other factors constant.

Table 4.4 Project Manager Experience

Experience as a project manager	Frequency	Percentage
< 5 years	7	16.28
5 - 10 years	28	65.12
> 10 years	8	18.60
Total	43	100.00

Source: Own survey, 2020

4.2. Project Managers' Competence Descriptive Analysis

Descriptive analysis refers to statistically describing, aggregating, and presenting the constructs of interest or associations between these constructs. The principal objective of descriptive statistics is to accurately describe distributions of certain variables within a specific data set (Marczyk, DeMatteo, Festinger 2005). Central tendency and dispersion are some of the methods for examining the distribution of variables. Central tendency is an estimate of the center of a distribution of values while Dispersion refers to the way values are spread around the central tendency. (Anol 2012). Mean and standard deviation are used in this project work respectively.

Mean is the most common measure of central tendency and may be defined as the value which we get by dividing the total of the values of various given items in a series by the total number of items. Standard deviation measures dispersion considering outliers by using a formula that takes into account how close or how far each value from the distribution means.

$$\sigma = \sqrt{\frac{\Sigma (X - \mu)^2}{N}}$$

- σ = standard deviation
- $\sum$ = summation
- X = value of each variable
- μ = mean
- N = number of values

A descriptive analysis for mean value of the three Project Managers' Competence variables ranges between 4.17 to 4.39. The standard deviation is also ranges between 0.53 to 0.70. The value of SD indicates that most of respondent agreed about the importance of the project managers' competence variables stated. Most of the replies for these competence variables ranges from agree to strongly agree, though there is also a minimum rate of strongly disagree from the respondents on the personal characteristics competence. The overall result shows that the respondents mostly agreed on the importance of outlined competence variables.

Table 4.5 Project Managers' Competence

Competence Variables	Minimum	Maximum	Mean	SD
Knowledge	3	5	4.39	0.62
Skill	3	5	4.32	0.53
Personal Characteristics	3	5	4.17	0.70
Competence Averages			4.29	0.62

Source: Own Survey, 2020

4.2.1. Knowledge Competence

As shown on the below table (4.6) most of the respondents agreed with the stated variables under knowledge competence with the average mean value of 4.39 and average standard deviation of 0.62, which 0.49 to 0.78. This result shows that there is a consensus among respondents on stated variables of knowledge competence.

Diligent planning, setting objectives and strategies, managing resources and risks; and being aware of organizational facts are some of the variables that this study tried to look their relationship or importance of knowledge competence on the success of a project. Most

respondents' response indicates that these are items that a project manager has as a knowledge competence.

Table 4.6 Knowledge Competence

Knowledge	**N**	**Mean**	**SD**
1.1 The project manager makes time to plan thoroughly and prioritize diligently.	43	4.40	0.49
1.2 Making judgments based on reasonable assumptions, and be aware of their impact	43	4.42	0.63
1.3 Set objectives of the project in alignment with the strategic plan of the organization	43	4.12	0.76
1.4 Manage project elements, including, but not limited to, schedule, cost, resources, and risks.	43	4.35	0.78
1.5 Work with the project sponsor, team, subject matter experts and stakeholders to develop an appropriate project delivery strategy.	43	4.60	0.49
1.6 Implement the strategy in a way that maximizes the business value of the project.	43	4.23	0.68
1.7 The project manager is knowledgeable enough to explain the project to others in aspects of the organizational strategy, mission, goals and objectives	43	4.63	0.49
Average		**4.39**	**0.62**

Source: own survey 2020

4.2.2. Skill Competence

As shown on the below table (4.7) most of the respondents agreed with the stated variables under skill competence with the average mean value of 4.32 and standard deviation of 0.53, which ranges from 0.43 to 0.66. This result shows that there is a consensus among respondents on high significance of skill competence.

Communicate at different levels, able to recognize project management methodologies, planning and organizing, dealing with changes and conflicts, problem solving and having holistic view of the project are among some of the variables that this study tried to look their relationship or importance as skill competence on the success of a project. Most respondents' response indicates that these are items that a project manager has as a skill competence.

Table 4.7 Skill Competence

Skill	N	Mean	SD
2.1 The project manager recognizes the project management frameworks, standards and methodologies	43	4.40	0.66
2.2 Understands the business methods, processes and procedures of the projects as well as the organization.	43	4.16	0.53
2.3 Has planning and organizing skills	43	4.51	0.51
2.4 Able to communicate at different levels	43	4.65	0.48
2.5 Able to deal with ambiguity, changes, conflicts	43	4.05	0.43
2.6 Exhibit integrity and being culturally sensitive, courageous, a problem solver, and decisive	43	4.14	0.52
2.7 Has a holistic and systemic view of the project, taking into account internal and external factors equally.	43	4.35	0.57
Average		**4.32**	**0.53**

Source: Own survey, 2020

4.2.3. Personal Characteristics

As shown on the below table (4.8) most of the respondents agreed with the stated variables under personal characteristics competence with the average mean value of 4.17 and standard deviation of 0.70, which ranges from 0.50 to 1.37. This result shows that there is unanimity among respondents on high significance of personal characteristics.

Team building, commitment, being friendly, honesty, trustworthy, optimistic, collaborative, supporting others, building team spirit and developing teams are among some of the variables that this study tried to look their relationship or importance of personal characteristics as a project manager competence on the success of a project. Most respondents' response indicates that these are items that a project manager has as a competence except on investing time in developing others' competencies, and effort in coaching on which the respondents agreed less.

Table 4.8 Personal Characteristic competence

Personal Characteristics	N	Mean	Std. Deviation
3.1 Able to build effective teams, be service-oriented, and have fun and share humor effectively with team members.	43	4.07	0.59
3.2 Shows organizational dedication and obligation for success if the project.	43	4.19	0.50
3.3 Exercise respect, helping others retain their autonomy, courteous, friendly, kind, honest, trustworthy, loyal, and ethical.	42	4.26	0.63
3.4 Being optimistic, collaborative, positive and give credit to other where due to ensure project success	43	4.51	0.51
3.5 Coordinate and support people responsible at different level of the organization to get the work done	43	4.19	0.66
3.6 Relate individual and team concepts with aspects of the project	43	4.40	0.62
3.7 Show effort in developing and coaching the project team.	43	3.58	1.37
Average		**4.17**	**0.70**

Source: Own survey, 2020

The overall analysis result shows that there is an agreement between most of the respondents on the variables raised to constitute a project mangers' competence. The average SD value for all the three competence variables resulted below one (0.62 for Knowledge; 0.53 for Skill; and 0.70 for personal characteristics) which shows responses from the project managers is closely dispersed to the mean. Though the overall result shows an agreement on items raised some respondents expresses their disagreement on some aspect of personal characteristics competence of the project manager. This competence sub variable on which the responses indicate which needs an improvement is that the project managers' commitment towards coaching his/her team to develop their capacity for the better achievement of the project's success.

4.3. Project Success Descriptive Analysis

As shown on the below table (4.9) most of the respondents agreed moderately on the stated variables under project success with the average mean value of 3.80 and standard deviation of 0.60 which ranges from 0.29 to 0.92. This result shows that there is a moderate agreement among respondents on the identified variables of project success. The respondents are less agreed on aspects such as major cost changes and on time completion.

Table 4.9 Project Success

Project Success	**N**	**Mean**	**Std. Deviation**
1. No major with- cost change demands in the project	43	3.23	0.92
2. Avoidable resources are reduced with the help of project manager's experience.	43	4.09	0.57
3. The project was completed on or with acceptable budget variance.	43	3.91	0.29
4. The Project manager reduced the cost of some activities with no impact on the project quality.	43	3.79	0.64
5. Most of the scheduled milestones were met.	43	3.95	0.58
6. On time completion of the project.	43	3.74	0.73
7. No slipping on the critical tasks and delivery dates.	43	3.53	0.67
8. The Project was delivered upon the predefined requirements.	43	3.86	0.35
9. The customer requirements are always fulfilled by the project deliverables	43	3.81	0.70
10. The business objectives of the project were achieved.	43	3.88	0.59
11. The unexpected risks probability is reduced by setting alternative plans.	43	3.95	0.62
Average		**3.80**	**0.60**

Source: Own survey, 2020

The responses show that about twenty three percent of respondents indicated in their response that there was major cost change request during the project and about thirty nine percent are neutral about it. It is also observed that most of the responses in this regard come from

construction and IT projects. It can thus be explained that, in construction projects, it is due to material cost inflation in the market. Requirement changes and emerge of new technology for existing projects are mentioned as some of the reasons for the cost changes.

About twenty seven percent of the respondents showed that there was a delay on completion of projects on time though the percentage is not significant from the total number responses received from the project manager. Of this percentage more than half of the delays are reported from the construction project managers. This is due to cost inflation of raw material and delays resulted from venders.

The overall result shows that there is a moderate agreement between respondents on variables mentioned to constitute project success criteria though there are areas which have improvement opportunity.

4.4. Relationship between Project Managers' Competence and Project Success

According to (C.R. Kothari, 2004), in measuring relationship between variables there are two questions we need to address.

i. Does there exists association or correlation between the two (or more) variables? If yes, of what degree?
ii. Is there any cause-and-effect association among the independent and dependent variables in the population bivariate or among more than two variables (a variable as dependent and 2 and more independent variables on the other) in the population multivariate? If yes, of what degree and in which direction?

The first question is answered by the use of correlation technique and the second question by the technique of regression.

4.4.1. Pearson Product - moment Correlation Analysis

According to Marczyk, DeMatteo, Festinger (2005), correlations are basic and useful measure of association between two or more variables. Correlations provide information about the direction of the relationship (either positive or negative) and the intensity of the relationship (–1.0 to +1.0). The sign of the coefficient represents the direction of the relationship. For instance, a correlation

of 0.78 would indicate a positive or direct correlation, while a correlation of –0.78 would indicate a negative or inverse correlation. The coefficient (value) itself indicates the strength of the relationship. The closer it gets to 1.0 (whether it is negative or positive), the stronger the relationship. Generally, correlation values of .01 to .30 are considered small, values of .30 to .70 are considered moderate, values of .70 to .90 are considered large, and values of .90 to 1.00 are considered very large. Importantly, these are only rough guidelines. This study used the Pearson product-moment correlation (r) as it is one of the most widely used correlations to determine the direction of the association and their strength between the variables. The correlation result interpretation is presented in the table below.

Table 4.10 Interpretation guide

Range	Result Interpretation
0.01 to 0.30	Small
0.31 to 0.70	Moderate
0.71 to 0.90	Large
0.91 to 1.00	Very large

Source: Marczyk, DeMatteo, Festinger (2005)

Below table (4.11) shows the result of correlations analysis which indicates the relation between the project managers' competence and project success. The correlation value ranges between ($r=0.356$, $p<0.01$) and ($r=0.560$, $p<0.01$) among competencies of the project manager and success of the project. It shows that, according to the interpretation table, there is positive moderate correlation between the independent and dependent variables. This also shows there is positive moderate correlation.

Table 4.11 Pearson's Correlation Result (Source: Own survey, 2020)

		Knowledge	Skill	Personal Characteristics	Project Success
Knowledge	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	43			
Skill	Pearson Correlation	.372*	1		
	Sig. (2-tailed)	.014			
	N	43	43		
Personal Characteristics	Pearson Correlation	.191	.386*	1	
	Sig. (2-tailed)	.221	.010		
	N	43	43	43	
Project Success	Pearson Correlation	.356*	.460**	.560**	1
	Sig. (2-tailed)	.019	.002	.000	
	N	43	43	43	43

*. Correlation is significant at the 0.05 level (2-tailed).

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

The relationship among the dependent and the independent variables is assessed by the correlation analysis. Furthermore, the cause-and-effect relationship between variables regression analysis is also conducted. Regression analysis is performed to examine the effect of the three independent variables (knowledge, skill and personal characteristics) on the dependent variable (project success). In the following, results for the diagnostic tests of the classical linear regression model assumptions and the regression analysis is presented.

4.4.2. Classical Linear Regression Assumptions and Diagnostic tests

Basically, there are statistical assumptions which need to be satisfied in regressing variables to bring out the underlying relationship among them and these assumptions are known as classical linear regression assumptions. According to (Brooks, 2008) the assumptions underlying the method include the assumption that states the mean of the error for all Xi (independent variables) is zero; the assumptions of homoscedasticity or no heteroscedasticity, which assumes that the variance of the errors is constant; no autocorrelation assumptions that presume the covariance between the error terms over time is zero; the assumption of normality that states the residuals are normally distributed with zero mean and constant variance; and at last multicollinearity assumption that states the explanatory variables are not correlated with one another. The test results for these assumptions are presented below for the regression model.

Normality Distribution Test

Prior of conducting multiple linear regression analysis the researcher has done one of basic assumptions of test of regression model test, test of normality distribution. Multiple regressions require normal distribution of the independent variables. The points falling by the side of a straight line shows the data is normally distributed. Non normality happens when there are nonconformities with this line. Outliers resulted when there is stragglers at one or another end of the normal probability plot. Long or short distribution tails both ends of the plot referred as curvature. A lack of symmetry resulted from curvature, concave or convex. Segmentation, plateaus or gaps, plateaus along the plot designate certain occurrence that needs closer analysis. From the result it is observed that a linear relationship exists among project success and project managers' competence. Appendix 2 contains the PP plot.

The Assumption of Zero means value of disturbances

According to (Gujarati, 2004), given the value of the independent variables, the mean, or expected, value of the random disturbance term *ui* is zero. This assumption will not be violated with the prevalence of a constant term in the regression equation (Brooks, 2008). The regression model in this study possesses constant terms so that the assumption of zero mean value of disturbances will hold.

The assumption of homoscedasticity

Given the value of explanatory variables, the variance of *ui* is the same for all observations, i.e. the errors in the regression equation have a common variance. This assumption is termed as homoscedasticity. Homoscedasticity refers to whether residuals are equally distributed, or whether they tend to bunch together at some values, at other values, spread far apart. Homoscedastic data plot looks like a shotgun blast of randomly distributed data. However, a cone or fan shape data indicates presence of heteroscedasticity.

As observed from the residuals plot, the data does not have an obvious pattern and the points are equally distributed on the x-axis (above and below zero), and on the y-axis (to the left and right of zero). Hence, the assumption of homoscedasticity is assumed to hold. The PP plot is shown in Appendix 2.

The assumption of no autocorrelation

The assumption is the errors are uncorrelated with each other. The errors expressed as 'serially correlated' or 'autocorrelated' if they are found to be not uncorrelated with one another. A test of this assumption is therefore required and as the population disturbances cannot be observed, tests for autocorrelation are conducted on the residuals (Brooks, 2008).

Durbin and Watson (DW) test is a test for first order autocorrelation, i.e. it tests a relationship between an error and its immediately previous value. According to Durban and Watson, the DW value close to 2 is a preliminary indicator for absence of serial correlation. In the current case, the DW test value is 2.41(see appendix 2). The value is a little greater than 2 and it can be concluded that there is no first order serial correlation among the disturbances.

Assumption of No Perfect Multicollinearity

One of the assumptions of classical linear regression mode is that there are no perfect linear relationships among the explanatory variables (Gujarati, 2004). Multicollinearity can be assessed by examining tolerance and VIF (Variance Inflation Factor). As per (Pallant, 2005), the variability of an identified predictor variable is not described by another predictor variable. A multiple correlations between the predictor variables indicated as high when result is less than 0.1 tolerance value, indicating likelihood of multicollinearity. Variance Inflation Factor (VIF) measures the impact of collinearity among the variables in a regression model. VIF is 1/ tolerance, and always greater than or equal to 1. VIF value more than 10, it indicates that there is a probability of multicollinearity among variables. An analysis result (stated in Appendix 2) indicates that there is no likelihood of multicollinearity between the variables in the model.

4.4.3. Multiple Regression Analysis

Multiple regression analysis was used to explain the effect of the explanatory variables on the explained variable statistically. To enable researchers measure the association among knowledge, skill and personal characteristics aspects of project managers' competences and a project success, a multiple regression is run as part of a simple regression.

In this research, the assumption is the variation in a project success Yci can be expressed for company c in terms of variations of project managers' skill, knowledge and personal characteristics and depicted in the following linear equation:

$$Y_{ci} = \alpha_1 + \Sigma\alpha_{2i}S_{ci} + \Sigma\alpha_{3i}K_{ci} + \Sigma\alpha_{4i}PC_{ci} + e_i$$

Where,

S_{ci} = Project managers' skill for company *i*

K_{cj} = Project managers' knowledge for company *i*

PC_{ci}= Project managers' personal characteristics for company *i*

α_1 = constant

e_i = stochastic term

α_{2i} = coefficient of S_{ci}

α_{3i} = coefficient of K_{ci}

α_{4i} = coefficient of PC_{ci}

According to Pallant (2005) a regression equation among the predictor and the predicted variable is developed as a result of multiple regressions.

This project work aims to assess the impact of project managers' competence on project success. While analyzing the correlation, it was indicated that all the independent variables (knowledge, skill and personal characteristics) have a moderate positive correlation with project success. Furthermore, to indicate their effect on project success multiple regression analysis is undertaken. As a result, percentage variance in the dependent variable (Success) explained by the independent variables (which are knowledge, skill and personal characteristics) is denoted by the result of adjusted R2 values and a test is also conducted to show the statistical significance.

Below model summary table (4.12) shows the result of the regressions analysis. Accordingly, 0.37 result of adjusted R square indicates that there is a 37.00% impact on the project success is caused by the project managers'competences. Consequently, 63.00% of the variation in project success was explained by other factors other than project managers' competence. In other terms, it is noted that 37.00% of the changes in the project success variables could be attributed to the combined effect of project managers' competence.

4.12 Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.644[a]	.415	.370	.1856	.415	9.209	3	39	.000

a. Predictors: (Constant), Personal Characteristics, Knowledge, Skill

b. Dependent Variable: Project Success

Source: own survey 2020

AVOVA

ANOVA is just another way of looking at our regression model and what it tells us is that out model with one predictor works better than simply predicting using the mean, rather shows the significance of statistical relationship between the predictor and outcome variable. Our table (4.13) shows that a significance of less than 0.001 which indicates there is a statistically significant relationship between the dependent variable (project success) and the predictor variables.

Table 4.13 ANOVA test result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.952	3	.317	9.209	.000[b]
	Residual	1.343	39	.034		
	Total	2.295	42			

a. Dependent Variable: Project Success

b. Predictors: (Constant), Personal Characteristics, knowledge, Skill

Source: Own survey 2020

Standard Beta Coefficient

To explain the relative significance of independent variables the standardized coefficients are used. After standardizing the independent variables regression analysis is done to got these coefficients. According to Pallant (2005) standardized beta values used to indicate the level of impact each independent variable has on the dependent variable.

Table 4.14 Standardized Beta Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.334	0.507		2.63	0.012		
	Knowledge	0.136	0.094	0.191	1.442	0.000	0.859	1.164
	Skill	0.173	0.111	0.220	1.565	0.000	0.758	1.319
	Personal Characteristics	0.269	0.082	0.438	3.296	0.002	0.848	1.179

a. Dependent Variable: Project Success

Source: own survey 2020

Above table (4.14) shows that personal characteristics has the higher effect on project success since its standardized coefficient beta value of B=0.438(43.8%). Project success is affected next by skill with value of B=0.220(22%). Knowledge competence with a beta coefficient value of B=0.191(19.1%) is found to have the least effect on project success. On the other hand, less than 0.01 significance values, indicates that the competence variables have positive significant effect on project success. Based on the results it can be concluded that the success of projects in the three selected organizations is influenced by knowledge, skill and personal characteristics competences of their project managers.

Generally, the findings of this study coincide with the findings of (Nigatu, 2019; Abay, 2019; Abebe, 2017 and Yared, 2018) who found that project managers' competences have significant effect on success of a given project. The study found out project success is more affected by personal characteristics or soft skills of project managers and this finding is consistent with (Abebe, 2017). However, skill competence of project managers was given more weight among the success factors of a project in the findings of (Abay, 2019 and Nigatu, 2019).

CHAPTER FIVE: CONCLUSION & RECOMMENDATION

5.1. Summary of Findings

The project managers' competence impact on project success is ranked as below per the outcome of the regression analysis:

Personal characteristics, per the results of this project work, ranked first having the highest significant effect on successes of project. It is agreed that project managers building effective teams by helping others to retain their autonomy, by being courteous and friendly. Optimism and collaboration of managers are another aspect that the respondents agreed that project managers show their commitment towards the organization to implement successful projects. Project managers' ability to link teams and individuals' capabilities towards the predetermined objectives is another variable which creates consensus among respondents to get the work done and achieve success in projects.

Skill is found to be the next competence that has significant effect on project success. The importance of both soft skill and hard skill are also supported by different literatures at different times. Communication and planning skills are major competence variables that the respondents expressed the agreement by awarding highest weight among others. Recognizing the project management frameworks, standards and methodologies; understanding the business methods, processes and procedures of the projects as well as the organization; ability to deal with ambiguity, changes, conflicts; exhibit integrity and being culturally sensitive, courageous, a problem solver, and decisive and having a holistic and systemic view of the project are other competences variables to implement successful projects.

Knowledge is another competence which has an impact on project success next to personal characteristics and skill competence. Being knowledgeable of the project strategies in aspects of the organizations' mission, goals and objectives and ability to work with the project sponsor, team, subject matter experts and stakeholders to develop an appropriate project delivery strategy are among the knowledge competence variables highly weighted by the respondents.

5.2. Conclusion

As per the results of this study, project success is significantly affected by knowledge, skill and personal characteristics competence variables of project managers. The mean result of these competences ranges from 4.17 to 4.39, with 0.53 to 0.70 ranged standard deviations. The result indicates the existence of a consensus on high degree of project managers' competence. The mean of 4.29 and 0.62 standard deviation values for the identified competence variables of a project manager indicates that there is an agreement on the existence of the mentioned competence variables; this make it consistent with the findings of the Galvin, *et al* (2014) and Briere, *et al* (2015).

Project success's overall result shows that there is a moderate agreement between respondents on variables mentioned to constitute project success criteria though there are areas which have improvement opportunity. It is shown that quality, which is detailed by fulfilling customer requirements, delivering projects upon predetermined requirements, meeting objectives and setting alternative plans to reduce the unexpected risks is the variable where most respondents agreed on which constitute project success. They are less agreed on the cost aspect of the project success, which is implied that some projects encounter some major cost changes which were unable to cut due to its effect on the quality of the deliverables. On the other hand, it is indicated that the project managers' experience helped to eliminate some unnecessary resources so does the cost on which. Time is another success variable addressed by meting critical delivery dates, scheduled milestone targets and on time completion on which some responses showed some variance.

5.3. Recommendation

- Build up professional development programs to improve personal characteristics competencies to maintain managers' quality like leadership, motivation, self-control, and openness, coaching, and team building to sustainable positive impact on projects.

- Offer project management trainings at company level and encourage the project managers to take different courses to develop their knowledge in managing projects as well as their skills.

- Continuous refreshment trainings to project managers since various tasks can be tedious and the managers' negligent performance may put the project in hazard.

- Since competence development is a continuous process, after offering various development options there need to be regular assessment of performance to measure level of competence and entertain improvement opportunities in alignment with the project success.

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Appendix 1: Questionnaire

ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE
GRADUATE STUDIES PROGRAM
MA IN PROJECT MANAGEMENT
SURVEY QUESTIONNAIRE

Dear Respondent,

My name is Netsanet, I am MA student in Project Management at Addis Ababa University School of Commerce. As part of my MA requirement, I am doing project work on: "The Effect of Project Managers' Competence on Project Success" on your organization.

I kindly request you to participate in this project work by filling the questionnaire. Please do not include your name so as to confirm that confidentiality of your responses. Kindly, I will be expecting your genuine reply in good time.

I would like to appreciate your willingness and cooperation in giving reliable information and also let you know that your responses will only be used for academic purpose only.

Thank you very much for your valuable time.

For any clarification needed please contact me on: +251-911-099518/ethiokid251@gmail.com

Sincerely
Netsanet Gelata

Overall Instructions

- Name of the respondent is not required.
- In all cases where answered options are available please tick (X) in the appropriate box.

Part I: Respondent's demographic data

1. Gender: Male ☐ Female ☐
2. Age Group: 20-30 ☐ 30-40 ☐ Over 40 ☐
3. Education Level: Bachelor's Degree ☐ Master's Degree ☐ Postgraduate Diploma ☐
   Other: Please Specify_____

4. Highest size of the project you have managed *(based on the project's budget and currency=USD)*

Small (<$100K) ☐ Intermediate ($101K - $300K) ☐

Large ($301 -$500K) ☐ Very Large (>$500K) ☐

5. Experience as Project Manger

< 5 years ☐ 5 to 10 years ☐ > 10 years ☐

Part II: Project Managers Competence

Scale: 1-Strongly disagree, 2- Disagree, 3- Neutral, 4 – Agree, 5- Strongly Agree

		1	2	3	4	5
1. Knowledge						
1.1	The project manager make time to plan thoroughly and prioritize diligently					
1.2	Making judgments based on reasonable assumptions and be aware of their impact.					
1.3	Set objectives of the project in alignment with the strategic plan of the organization.					
1.4	Manage project elements, including, but not limited to, schedule, cost, resources, and risks					
1.5	Work with the project sponsor, team, subject matter experts and stakeholders to develop an appropriate project delivery strategy					
1.6	Implement the strategy in a way that maximizes the business value of the project					
1.7	The project manager is knowledgeable enough to explain the project to others in aspects of the organization's strategy, mission, goals and objectives …					
2. Skill						
2.1	The project manager recognizes the project management frameworks, standards and methodologies					

2.2	Understands the business methods, processes and procedures of the projects as well as the organization.					
2.3	Has planning and organizing skills					
2.4	Ability to communicate at different levels					
2.5	Ability to deal with ambiguity, changes, conflicts					
2.6	Exhibit integrity and being culturally sensitive, courageous, a problem solver, and decisive					
2.7	Have a holistic and systemic view of the project, taking into account internal and external factors equally					
3. Personal Characteristics						
3.1	Able to build effective teams, be service-oriented, and have fun and share humor effectively with team members.					
3.2	Shows organizational dedication and obligation for success if the project.					
3.3	Exercise respect, helping others retain their autonomy, courteous, friendly, kind, honest, trustworthy, loyal, and ethical.					
3.4	Being optimistic, collaborative, positive and give credit to other where due to ensure project success					
3.5	Coordinate and support people responsible at different level of the organization to get the work done					
3.6	Relate individual and team concepts with aspects of the project					
3.7	Show effort in developing and coaching the project team.					

Part III: Project Success

Scale: 1-Strongly disagree, 2- Disagree, 3- Neutral, 4 – Agree, 5- Strongly Agree

Project Success		1	2	3	4	5
1	No major with- cost change demands in the project					
2	Avoidable resources are reduced with the help of project manager's experience.					
3	The project was completed on or with acceptable budget variance.					
4	The Project manager reduced the cost of some activities with no impact on the project quality.					
5	Most of the scheduled milestones were met					
6	On time completion of the project					
7	No slipping on the critical tasks and delivery dates .					
8	The Project was delivered upon the predefined requirements					
9	The customer requirements are always fulfilled by the project deliverables					
10	The business objectives of the project were achieved					
11	The unexpected risks probability are reduced by setting alternative plans					

Appendix 2: Correlation and Regression Results

Correlation

		Knowledge	Skill	Personal Characteristics	Project Success
Knowledge	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	43			
Skill	Pearson Correlation	.372*	1		
	Sig. (2-tailed)	.014			
	N	43	43		
Personal Characteristics	Pearson Correlation	.191	.386*	1	
	Sig. (2-tailed)	.221	.010		
	N	43	43	43	
Project Success	Pearson Correlation	.356*	.460**	.560**	1
	Sig. (2-tailed)	.019	.002	.000	
	N	43	43	43	43

*. Correlation is significant at the 0.05 level (2-tailed).

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

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Personal Characteristics, Knowledge, Skill	.	Enter

a. Dependent Variable: Project Success

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.644[a]	.415	.370	.1856	.415	9.209	3	39	.000

a. Predictors: (Constant), Personal Characteristics, Knowledge, Skill

b. Dependent Variable: Project Success

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.952	3	.317	9.209	.000[b]
	Residual	1.343	39	.034		
	Total	2.295	42			

a. Dependent Variable: Project Success

b. Predictors: (Constant), Personal Characteristics, Knowledge, Skill

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.334	0.507		2.63	0.012		
	Knowledge	0.136	0.094	0.191	1.442	0.000	0.859	1.164
	Skill	0.173	0.111	0.220	1.565	0.000	0.758	1.319
	Personal Characteristics	0.269	0.082	0.438	3.296	0.002	0.848	1.179

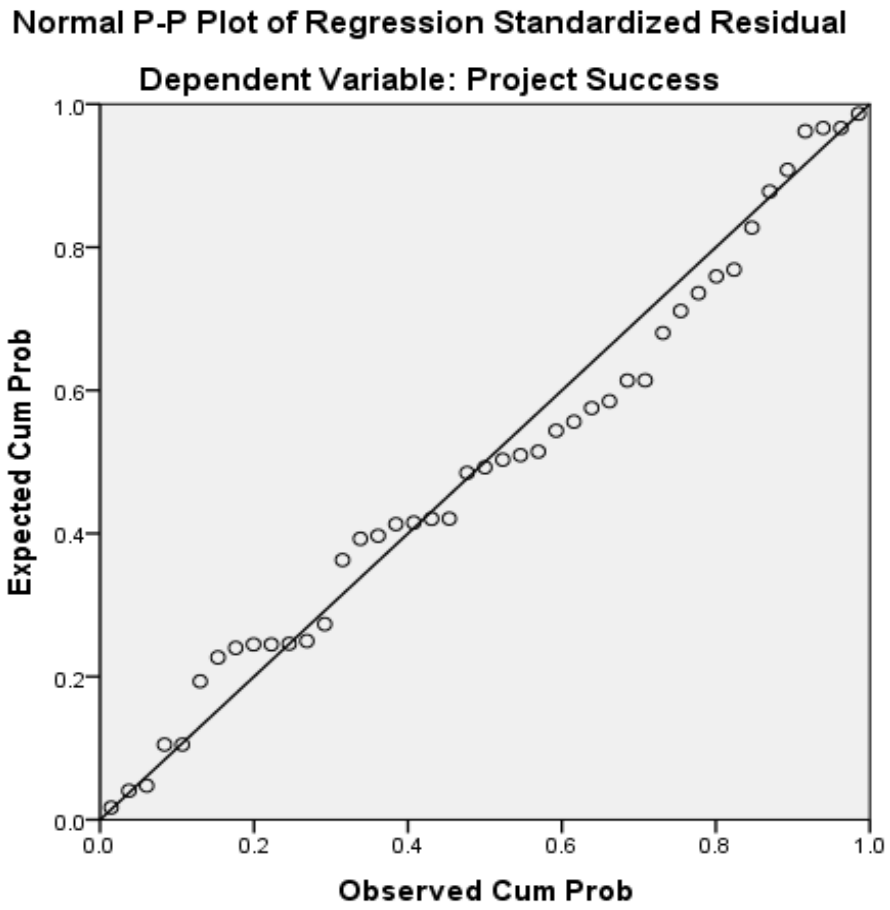
a. Dependent Variable: Project Success

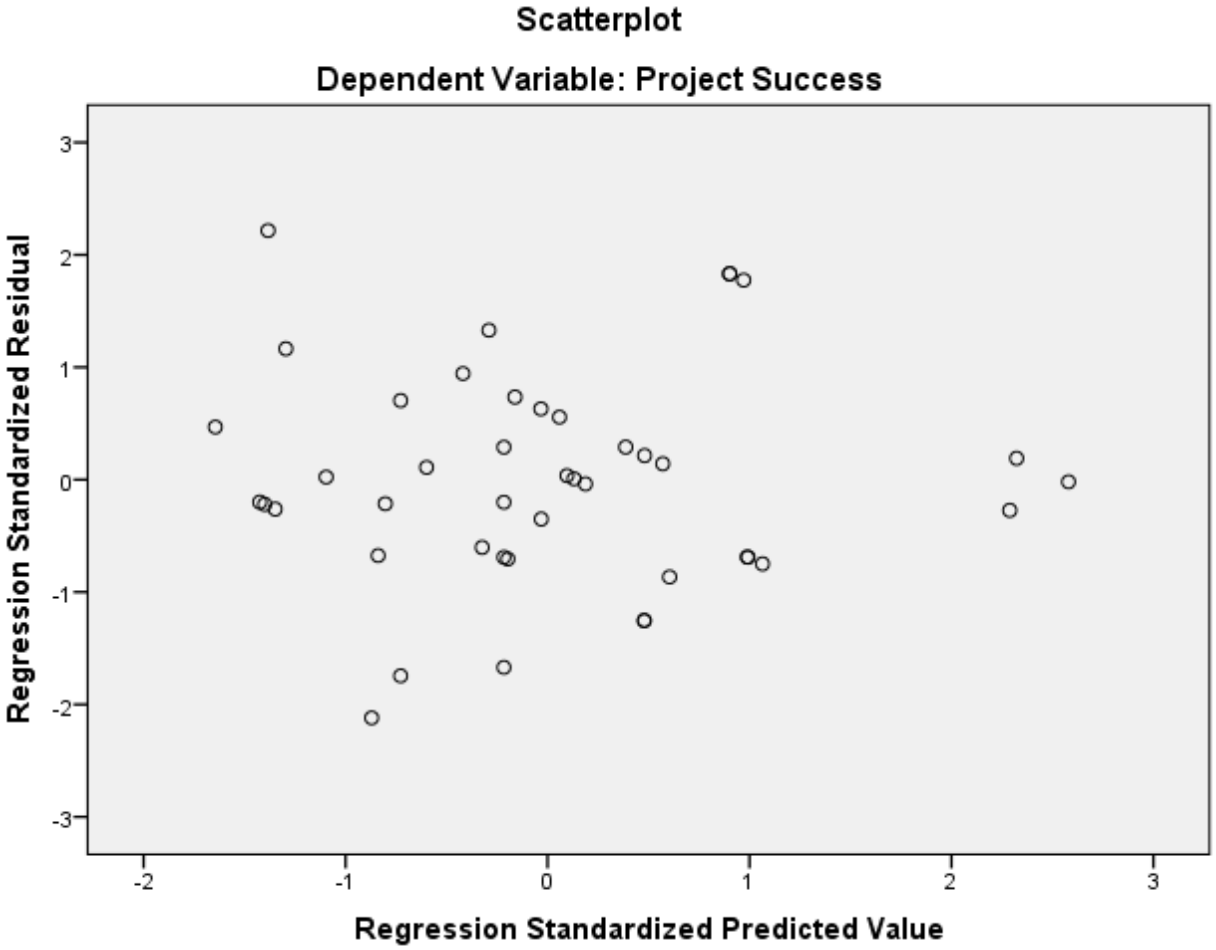
Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.644[a]	.415	.370	.1856	2.417

a. Predictors: (Constant), Personal Characteristics, Knowledge, Skill

b. Dependent Variable: Project Success




Scatterplot
Dependent Variable: Project Success
Regression Standardized Residual
Regression Standardized Predicted Value
3
2
1
0
-1
-2
-3
-2
-1
0
1
2
3