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**ST. MARY’S UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

**PRACTICES AND CHALLENGES IN THE PLANNING OF INFORMATION TECHNOLOGY PROJECTS: THE CASE OF INFORMATION NETWORK SECURITY AGENCY, ADDIS ABEBA , ETHIOPIA**

**BY**

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**JUNE, 2021**

**ADDIS ABEBA, ETHIOPIA**

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**A THESIS SUBMITTED TO THE ST. MARY’S UNIVERSITY SCHOOL OF GRADUATES STUDIES IN THE PARTIAL FULFILMENT OF THE REQUEREMENTS FOR THE DEGREE OF MASTER OF ARTS (MA) IN PROJECT MANAGEMENT**

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**APPROVED BY BOARD OF EXAMINERS**

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**Internal Examiner Signature**

**DECLARATION**

I declare that the project entitled “practices and challenges in the planning of information technology projects: the case of information network security agency, Addis Abeba, Ethiopia” is my original work and has not been presented for any degree in this university or any other university or colleges, as well as all sources of material, used for the project have been duly acknowledged.

**MILLION ABATE**

**St. Mary’s University, Addis Ababa**

**June, 2021**

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**ACRONYMS AND ABBREVIATIONS**

|  |  |
| --- | --- |
| GC  INSA | Gregorian Calendar  Information Network Security Agency |
| ISO | International Organization for Standardization |
| IT | Information Technology |
| LC | Letter of Credit |
| PM  PMBOK | Project Management  Project Management Book of Knowledge |
| PMI | Project Management Institute |
| SPSS  SW  SWOT  UI  UK  UX  WBS | Statistical Package for the Social Sciences  Software  Strength Weakness Opportunity and Trend  User Interface  United Kingdom  User Experience  Work Breakdown structure |

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**ABSTRACT**

*This study assesses information technology projects planning practices and challenges in information network security agency (INSA). During the study, a comprehensive literature reviews was conducted to identify the knowledge and to find out the gap of knowledge on planning IT projects. It used descriptive type of research. The target population of planning IT projects were project management team, business analysis team, software development team, network infrastructure team, data center team and electronic security team at the organization. The primary data was collected from questionnaire and semi structured interviews. After collecting adequate data graphical and tabulation presentation was used for analysis generated from statistical package for social science (SPSS) IBM version 26.0. The major finding revealed that poor schedule management, project scope definition, poor communication with stakeholders, delay of government procedure for procurement, project participant commitment and unskilled expertise in the field was the practical challenges for IT project planning. More over the study analyze the practices of IT project planning by addressing the practices of planning in each project management knowledge areas. Based on these major findings conclusions and recommendations are given.*

***Key words: project management, project management plan, project management knowledge areas, information technology, IT projects.***

# **CHAPTER ONE**

# **1. INTRODUCTION**

This chapter of the paper provides the overall study of the paper, which discusses statement of the problem, objectives, research questions, scope and limitation of the study, significance of the study and how the study is organized.

## **1.1 Background of the study**

Planning is a process begins with an understanding of the present status and the desired future. The gap between these two states causes the project manager to identify and evaluate alternative approaches, recommend a preferred course of action, and then synthesize that course of action into a viable plan (Richman, 2011).

Project planning is at the heart of the project life cycle, and tells everyone involved where to go and how to get there. The planning phase is when the project plans are documented, the project deliverables and requirements are defined, and the project schedule is created (Williams, 2008). It involves creating a set of plans to help guide team through the implementation and closure phases of the project. The plans created during this phase will help to manage time, cost, quality, changes, risk, and related issues. In addition, help to control staff and external suppliers to ensure to deliver the project on time, within budget, and within schedule (Williams, 2008) .

According to (Williams, 2008) planning has processes for implementing on projects. These are: Break down the project into pieces small to get enough to work with the detail information of the tasks and quiet simple for management, Identify dependencies and objectives which helps for recognizing the gaps between the tasks and find out the resources to done the work sequentially, estimation of time and cost which helps to predict how long the production of the various deliverables will take and how much cost the project needs for requirement i.e. initial time schedule and budget for build a project, Add contingency is extra time that’s allowed in the schedule to cover unexpected events. e.g. A milestone that takes longer to achieve than planned and a problem that is harder to solve than realized then, consider the risk by identifying the likelihood of its occurrence and its severity. And the final process is representing the plan in a format that the team, board, and stakeholders will understand and follow.

Many information technology (IT) professionals become captivated with the technology and day-to-day problem solving involved in working with information systems that tend to become frustrated problems of people willingness to accept the technology in most organizations (Schwalbe, 2016). The project context has a critical impact on which product development life cycle will be most effective for a particular software development project. Likewise, several issues unique to the IT industry have a critical impact on managing IT projects. These include the nature of projects, the characteristics of project team members, and the diverse nature of technologies involved.

IT projects establish a new technology-based system or service. IT projects have become more complex as technologies rapidly change and end users demand greater because of ease of use and flexibility. In this competitive globe, IT provide leverage for modern information by eliminating paper based tracking and implementing automating systems this let the organization to develop its own transformation competent. The selected governmental organization was established in 2007 G.C with an objective to conquer the country’s information infrastructure, and prevent information technologies from attack, to prevent cybercrimes that become gradually complex and protecting national interest. The organization participates on national infrastructure projects which are related with IT that includes software development, network and infrastructure, datacenter consultancy, video surveillance and physical security, cyber security and cyber awareness. To explore different options of requirement and to make a decision on the projects, planning has vital role. It considers the project requirement used within budget and resource to deliver quality service within schedule.

Project planning is relates to the use of schedules subsequently report progress within the project based on constrains time, cost, scope and quality. Projects make up a significant portion of work in most business organizations or enterprises, and managing those projects successfully is crucial to organization success. Lack of competence among planners, having hidden agendas during planning, underestimation of costs and overestimation of benefits, unrealistic and inconsistent assumptions, and how to secure essential planning data and adequate contract regimes are found to be among the many challenges the public investment projects are facing. Many of these problems are encountered as part of the front-end decision-making phase preceding the final decision to go ahead (Samet & Volden, 2016).

According to Raz & Shenhar, activities done in the planning phase are the most important ones than the other project phases in determining the success of a project (Raz & Shenhar, 2003). During project planning project requirements, client expectations, and project objectives are determined and the project baseline plan is created (Meredith, Shafer, & Mantel, 2017). In this phase, workable methods are developed and maintained for accomplishing business needs and objectives that the project was originally undertaken to address. This includes activities conducted throughout the project that identify and reaffirm the processes, practices, procedures, resources, schedules, and deliverables that are needed or expected for successful completion of projects with organizational goals and objectives (Meredith, Shafer, & Mantel, 2017).

Project planning helps for guiding stakeholders, sponsors, project teams through project all phases of management processes. Project failures have significant effect from economic as well as political points of view**.** If the project takes longer time it requires additional resources, and budgets and this increases labor, material, machinery and equipment cost. As a result it affects the budget of other projects and affects economy of the country. Similarly, due to delay in project implementation the people and the economy have to wait for the provision of public and services facility longer than necessary. Thus failure of project limits the growth of the economy because the output provided by infrastructure, construction, manufacturing, IT projects serve as input for many other sectors of the economy (Lemma, 2014).

IT projects has great potential on developing modern world. It improves communication, automate business operations, enhance the transparency of jobs and enhance clients’ satisfaction.

## **1.2 Statement of the problem**

In developing countries like Ethiopia, information technology importance largely has direct and indirect impact on all economic activities and it is able to contribute to the national output which stimulates growth of the other sectors. However in practice IT sector projects has faced different problems due to people willingness to accept from manual system to automation, lack of effective rules and regulation on information technologies and poor planning of projects. Projects are needed to be completed within the time frame, budgeted cost and required quality. However, unfortunately many projects take longer time to complete, cost more than necessary and some projects are cancelled because of various factors directly and/or indirectly related with it. According to (Sakamba, 2020), one of the main reasons of project failure in developing countries is lack of effective planning processes.

Planning a project includes determining the timing for the project, breaking down the project in systematically sequenced steps, allocation of resources to each step of the project, and determining timings for evaluation of the completed work. This study explores practices and challenges in the planning of information technology projects at information network security agency (INSA). The organization face problems of delay on delivering IT projects and took above the required resources for delivering projects due to unorganized planning process. i.e. IT projects in INSA proceed without knowing all the requirements ahead leads to additional resources to be add after the projects are started, not properly managing additional scope with inappropriate change of human resource and technological change of the projects leads to extended time to finish it due to lack of expertise in the field and scope creep. Moreover, on implementing of project plan the organization finding difficult to get customer acceptance to implement IT project, financial problems like not getting letter of credit (LC) on the expected time. The under estimation of the time and cost will result the project teams to stressed and frustrated to address the required quality product and service. Therefore this study assess the practice and challenges of IT projects planning, identify the practice of project planning in each knowledge areas and asses project planning problem areas and its role in project outcome in the organization to take corrective action.

## **1.3 Objective**

### **1.3.1 General objective**

The main objective of this study is to assess the practices and challenges of IT projects planning within information network security agency (INSA).

### **1.3.2 Specific objectives**

The specific objectives of the study are to:

* Assess the practices of project integration management plan
* Assess the practices of project scope management plan
* Assess the practices of project schedule management plan
* Assess the practices of project resource management plan
* Assess the practices of project cost management plan
* Assess the practices of project quality management plan
* Assess the practices of project communication management plan
* Assess practices of project risk management plan
* Assess practices of project procurement plan
* Assess the practices of project stakeholder management plan
* Identify the challenges that are faced during planning of IT projects
* Identify the benefits of project planning

## **1.4 Research questions**

This paper will review the literature written on the subject of the IT project management planning practices and challenges. The following are the research questions we will examine.

* What are the practices of project integration management plan?
* What are the practices of project scope management plan?
* What are the practices of project schedule management plan?
* What are the practices of project resource management plan?
* What are the practices of project cost management plan?
* What are the practices of project quality management plan?
* What are the practices of project communication management plan?
* What are practices project risk management plan?
* What are practices project procurement management plan?
* What are the practices of project stakeholder management plan?
* What are the challenges occur in planning IT projects?
* What is the role of planning on the project output?

## **1.5** **Scope and limitation of the study**

The scope of the study is to examine practices and challenges in the planning of IT projects at information network security agency, which focus on network infrastructure, software development, datacenter and electronic security projects. The sample was taken from the participants of those IT projects. Inthis paper sample is taken only on the basis of the active IT projects which are held ongoing due to gathering the information from past projects are not reliable which would hide the facts about the practices of previous projects this limit the study.

## **1.6 Significance of the study**

The finding of the study help the organization to look the gaps and constraints of the IT project deliverables and it helps to identify the goals, avoid missing deadlines, prioritizing essential tasks, reduce risk and deliver the desired results. Hence planning defined properly, project teams acquire and maintain to undertake their tasks, and all are responsible for those tasks that are within the work. It is the role of the project manager to make sure that all planned timelines and budgets are being adhered to implement projects geared towards improving the overall deliverables. Without planning, teams and clients are at risk of chaotic management, unclear objectives, poor quality deliverables, and wastage that takes the project over budget and time.

## **1.7 Organization of the study**

This paper is organized in five sections of chapters. The first chapter deals with the introduction the study it includes background of the study, statement of the problem, research objective, research questions, scope and limitation, significance of the study and organization of the study. The second chapter deals with literature review which includes theoretical review and empirical review. The third chapter deals with research methodology it includes research approach and design, data sources and data collection methods, population and sampling and methods of data analysis. The fourth chapter includes results and discussion. The last chapter, chapter five includes summary, conclusion and recommendation.

# **CHAPTER TWO**

# **2. LITERATURE REVIEW**

## **2.1. Theoretical review**

### **2.1.1 Project and project management**

Projects are a key way to create value and benefits in organizations. In today’s business environment, organizational leaders need to be able to manage with tighter budgets, shorter timelines, scarcity of resources, and rapidly changing technology (Dionisio, 2017). According to PMBOK project defined as “a temporary end over that is needed to produce a unique and predefined outcome or result in a pre-specified time using predetermined resources” (PMI, 2000). ISO 21500 defines project management as “the application of methods, tools, techniques and competences to a project. Project management includes the integration of the different stages of the project life cycle. Project management is accomplished through processes” (Zandhuis & Stellingwerf, 2013). Moreover, (PMI, 2017) defines project management is therefore the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Project management practices attempt completion of the project as intended; getting it done most efficiently by minimizing cost and achieving external goals related to customer needs. Project management principles and techniques help to complete projects on time, within budget and to project specifications. At the same time, they help achieve the other goals of the organization, such as productivity, quality, and cost-effectiveness. The objective of project management is to ensure completion of projects and to meet agreed goals of time, cost and scope (Richman, 2011).

### **2.1.2 Project management processes and project management knowledge areas**

PMBOK defines five project management processes, which form a series of actions directed towards a particular result. These are initiation, planning, executing, monitoring and  
controlling and closing (PMI, 2000). More over the book describes that, initiating the process involves defining and authorizing a project or a project phase. The planning process includes devising and maintaining a workable plan to further track the progress of the project and the stakeholders’ needs. Any change in the project is well evaluated and managed, and can be adjusted in the plan accordingly. Executing is the process whereby the actual implementation of the plan is performed, resulting in the produced products. Controlling is a process that ensure the project objective is met by monitoring and measuring progress regularly by identifying the variances from the plan and action can be taken for that. The final project process, closing is acceptance of the project and bring it on orderly end.

According to (PMI, 2017) from the five process phases of project management there are project management knowledge areas. These are project integration management, project scope management, project schedule management, project cost management, project quality management, project resource management, project communication management, project risk management, project procurement management and project stakeholder management.

### **2.1.3 Overview of Project Planning**

The project management plan should be baselined. According to (Schwalbe, 2016), the baseline should be necessary to define at least the project references for scope, time, and cost, so that the project execution can be measured and compared to those references and performance can be managed. Before the baselines are defined, the project management plan may be updated as many times as necessary. No formal process is required at that time. But, once it is base lined, it may only be changed through the Perform Integrated Change Control process. Consequently, change requests will be generated and decided upon whenever a change is requested. This results in a project management plan that is progressively elaborated by controlled and approved updates extending through project closure (Serrador, 2013).

A project plan is created outlining the activities, tasks, dependencies, and timeframes. The project manager coordinates the preparation of a project budget by providing cost estimates for the labour, equipment, and materials costs. The budget is used to monitor and control cost expenditures during project implementation.

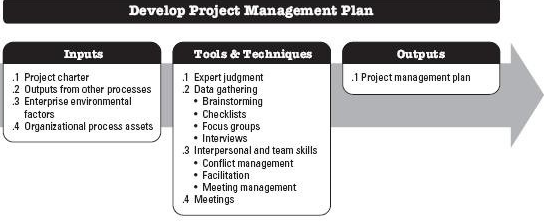


Figure 2.1 Develop Project Management Plan

### **2.1.4 Project management planning knowledge areas**

The project management plan defines how the project is executed, monitored and controlled, and closed. The project management plan’s content varies depending on the application area and complexity of the project. The project management plan may be either summary level or detailed. Each component plan is described to the extent required by the specific project. The project management plan should be robust enough to respond to on every changing project environment. This agility may result in more accurate information as the project progresses.

Planning process is of major importance to a project because the project involves doing something that has not been done before. It is defining objectives and scope, goals and milestones (deliverables), and assigning tasks and budgetary resources for each step.

To identify the problems and interdependencies on the project one should know the project management knowledge areas. Planning process is a part of project management knowledge areas (PMI, 2017). Therefore planning can be categorized to integration planning, scope planning, schedule planning, cost planning, quality planning, resource planning, communication planning, risk planning, procurement planning and stakeholder planning.

#### **2.1.4.1 Project Integration Planning**

Project integration management is the coordination of all elements of a project. This includes coordinating tasks, resources, stakeholders, and any other project elements, in addition to managing conflicts between different aspects of a project, making trade-offs between competing requests and evaluating resources.

Project plan integration uses the output of the other planning process to create a consistent, coherent document that can be used to guide project execution and project control (PMI, 2000). The plan should include general plans regarding all areas of the project such as; project objectives, time schedule, budget, etc (PMI, 2017). Since project plan is the main document developed in the planning process and it is very important to allocate sufficient amount of time and resources for this process. A project with a poor developed project plan is most likely to be poorly executed with high costs and delays as a result. The tools and techniques include: project planning methodology stakeholder skills and knowledge, project management information system, earned value management (PMI, 2000).

#### **2.1.4.2 Project Scope Planning**

Scope planning is the process identifying g goals, objectives, tasks, resources, budget, and timeline of the project. This process covers descriptions on deliverables, constraints, and assumptions (PMI, 2000). The tools and techniques involved in this category include: a benefit/cost analysis, strength weakness opportunities and threats (SWOT) analysis related to the project, a project work breakdown structure (WBS) which is an outcome-oriented grouping of project elements that organizes and defines the total scope of the project work not in the WBS is outside the scope of the project (Martinelli & Milosevic, 2016).

#### **2.1.4.3 Project Schedule Planning**

Project scheduling involves the planning of timelines for completing the work identified and establishing dates during which project resources will be needed to perform the work (Martinelli & Milosevic, 2016). Project manager may need a detailed schedule showing each work breakdown structure (WBS) element. Once the project is determined and WBS is created, the next step is to create delivery timeline. For each of the deliverable work item identified in the WBS it is necessary to identify list of activities to perform. Since project managers have a set of stakeholders with varying scheduling needs (Martinelli & Milosevic, 2016). For scheduling a project, the most widely used tool is the Gantt chart which shows sequence of activities, estimate activity duration. The other tool is the milestone chart scheduling it shows milestones against a time scale in order to signify key project events and to draw stakeholder attention to them (Martinelli & Milosevic, 2016).

The creation of the project schedule requires the team to define the conditions that will lead to the development of the schedule. The first piece of information needed for this step comes from the WBS that has all the activities identified for the project. The quality and completeness of the WBS will determine the quality of the schedule, and this is a good time for the project team to review if all the project activities are accounted for (PM4DEV., 2020).

#### **2.1.4.4 Project Resource Planning**

Resource planning involves determining what physical resources (people, equipment, material) and what quantities each should be used and when would be necessary to perform project activities it is closely coordinated with cost estimation. Tools and techniques for resource planning: expert judgment, alternative identification, project management software (PMI, 2000). Resource planning helps to organize project team so that they know exactly what projects and tasks they are working on more over resource planner that accurately tracks and manages the resource capacity ensures that to use the time effectively and to allocate the team based on the profession needed.

Despite the recent information and technology revolution in project management, people are still at the center of project management and they determine the success or failure of a project. The project team is involved in the definition of the project goals, which are instrumental in planning, organizing, directing, coordinating, and monitoring all project activities. The team is able to meet the project goals and objectives by the skillful use of interpersonal and organizational skills such as communication, delegation, Project Team Management decision-making, and negotiation. In the challenging environment of development projects, people can be viewed either as problems and constraints or as solutions and opportunities (PM4DEV, 2019)

#### **2.1.4.5 Project Cost Planning**

Project cost planning includes the processes of cost estimating and cost budgeting. The main objective of cost planning is to complete the project within the approved budget (PMI, 2000). Cost estimating involves, developing an approximation of the cost of resources needed to complete project activities and cost budgeting involves allocating the overall cost estimate to individual activities or work packages to establish a cost baseline for measuring project performance. Tools and techniques includes: analogues estimating, parametric modeling, bottom up estimating, computerized tools, vendor analysis (PMI, 2000).

#### **2.1.4.6 Project Quality Planning**

Quality planning involves identifying which quality standards are relevant to the project and determining how to satisfy them. Tools and techniques for project quality planning includes cost benefit analysis, benchmarking, flow-charting, design of component and cost of quality (PMI, 2000). Quality plans result from both deployed strategic quality policies (which are linked to organizational strategic plans) and from the specific legal regulations, industry standards, organization policies and procedures, internal guidelines, and good practices needed to meet customers’ requirements for products or services.

#### **2.1.4.7 Project Communication Planning**

Project communication involves determining the information and communications needs of the stakeholders. It also determines who will be receiving the communication, how those people will receive it, when they will receive it, and how often they should expect to receive that information (PMI, 2000). The tool for communication planning is stakeholder analysis the information needs for all stakeholders should be analyzed to develop method and logical view of information and sources to meet those information. It is important to report every progress of the project for all participant parties. A progress report should focus on deviations from the project plan and contain the status of the project, executed and planned actions, uncertainties and forecasts regarding cost and time (Martinelli & Milosevic, 2016).

#### **2.1.4.8 Project Risk Planning**

Project risk management planning is the process of identifying the risks that could be occurs during the lifecycle of the project and plan risk response by developing procedures and techniques to enhance opportunities and reduce threats from project objectives (PMI, 2000).

In risk planning, it needs to predict future performance based upon the status of the project. Forecasts of this type are not easy and are notoriously vulnerable, their essence is less in the accuracy and more in the creation of early-warning signals so that every team will be alert about the progress of the project this is brief description of the significance change and the risk event. Developing a risk management plan at the onset of a project can help to eliminate potential issues from emerging, or at least minimize the impact that they have on the project if they do occur (PMI, 2000). According to (Martinelli & Milosevic, 2016) tools can be identification checklist: Risk identification is an iterative process that occurs throughout the project cycle. Some project teams begin by identifying the categories of risk, such as technology risk, market risk, business risk, and human risk, and then use brainstorming and other problem identifying techniques to identify all potential risk events within each category. The risk register: typically includes a description of each risk event, a risk event identifier, risk assessment outcome, a description of the planned response, and summary of actions taken and current status, the Delphi technique: is useful in situations where outcomes or trends are uncertain. This is particularly true in situations that have not been encountered previously (Martinelli & Milosevic, 2016)

#### **2.1.4.9 Project Procurement Planning**

Procurement planning is the process of identifying which project needs and can best met by procuring product or services outside the project organization and should be accomplished during the scope definition effort (PMI, 2000).

The procurement plan includes budgeted cost and required finish date for each procurement (Eriksson & Westerberg, 2011). The procurement plan is an important tool for efficient procurements throughout the project. It should be developed based on the project´s WBS and time schedule in order to include all procurements and to be timely integrated in the project It determine how actual performance compares with planned activities, and thus to alert the pertinent departments and adjust the procurement plan accordingly.

#### **2.1.4.10 Project Stakeholder Management Planning**

Stakeholder management planning is the process of developing approaches to involve project stakeholders based on their needs, expectation, interests, and potential impact on the project (PMI, 2017). Tools & Techniques for stakeholder planning is on the basis of expert judgment, data gathering, data analysis, decision making, data representation and meetings.

### **2.1.5 Project management on IT projects**

According to (PMI, 2017) an IT projects might have phases such as requirements, planning, design, detail design, build, test, deploy and authorization. Each phase is completed sequentially. The business environment is dynamic with an accelerating rate of change. To remain competitive in the world economy, companies are embracing project management to consistently deliver business value.Well-analyzed projects often become the vehicle for obtaining outside assistance when both the company and the external financing agency agree on a specific project activity and know the amount of resources involved, the timing of loan disbursements, and the benefits likely to be realized.

Firms invest heavily in IT such as hardware, software, network, and data components; in order to improve their performance (Bezdrob , Brkic, & Gram, 2020) . Because of the diversity of IT projects and the newness of the field, it is important to develop and follow best practices in managing these varied projects. Developing best practices gives IT project managers a common starting point and method to follow with every project.

### **2.1.6 Methodologies used for IT project management planning**

#### **2.1.4.1 Agile**

Agile software development has a major influence on how software development is conducted. It has become an umbrella term for a number of changes in how software developers plan and coordinate their work, how they communicate with customers and external stakeholders, and how software development is organized in small, medium-sized and large companies from the telecom and healthcare sectors to games and interactive media (Dingsøyr, Dybå, & Moe, 2010 , p. 1)

Agile breaks down larger projects into small, manageable chunks called iterations. At the end of each iteration (which generally takes place over a consistent time interval) something of value is produced. The product produced during each iteration should be able to be put into the world to gain feedback from users or stakeholder.

Agile software development has been characterized differently from traditional development methods, mainly with the focus adapting to change and delivering products of high quality through simple work-processes. Agile and traditional methods of software development diverge on a number of aspects, including their fundamental assumptions, approach to control, management style, knowledge management, role assignment, role of the customer, project cycle, development model and desired organizational structure.

#### **2.1.4.2 Scrum**

The term 'scrum' originally derives from a strategy in the game of rugby where it denotes "getting an out-of play ball back into the game" with teamwork (Abrahamsson & Ronkainen, 2002, p. 30). Scrum concentrates on how the team members should function in order to produce the system flexibly in a constantly changing environment. The main idea of Scrum is that systems development involves several environmental and technical variables (e.g. requirements, time frame, resources, and technology) that are likely to change during the process. This makes the development process unpredictable and complex, requiring flexibility of the systems development process for it to be able to respond to the changes.

Scrum helps to improve the existing engineering practices (e.g. testing practices) in an organization, for it involves frequent management activities aiming at consistently identifying any deficiencies or impediments in the development process as well as the practices that are used.

Scrum process includes three phases: pre-game, development and post-game. The pre-game phase planning and Architecture/High level design includes the definition of the system being developed, The development phase (also called the game phase) is the agile part which includes different environmental and technical variables (such as time frame, quality, requirements, resources, implementation technologies and tools, and even development methods) identified in Scrum approach. In the development phase the system is developed in Sprints which are iterative cycles where the functionality is developed or enhanced to produce new increments (Abrahamsson & Ronkainen, 2002, pp. 30-32).

#### **2.1.4.3 PRINCE 2**

The UK government Central Computer and Telecommunication Agency (CCTA) in October 1996 introduced PRINCE 2. It is a methodology of project management, which is adapted for any project kind and size. It covers the management, control and organization of projects. It is a standard, very used by the UK government. It is also a recognized methodology, in the private sect (Pincemaille, 2008).

PRINCE 2 Is a framework for IT projects that manages the project plan by defining the roles and responsibilities of the project team from experience learning, manage step by step project plan, describe on product and service quality with new technologies complexity and compatibility and review each project stages.

## **2.2 Empirical Literature**

Among other functions of management, planning is the most important and the basic process of project (Teubner, 2018). If this function is properly implemented, and controlled, then potential for achieving final objectives of an enterprise can be assessed. Teubner further states that, being a tool with which to design appropriate actions to achieve stated goals, planning is an educational process which can be used to learn, in advance, about hidden as well as obvious requirements of a complex venture.

Projects are a part of an overall development strategy and a broader planning process. Within the broad strategy, analysts must identify potential projects that address the policy and organizational priorities. When there are one project alternatives available with a company for investment, projects being prepared and analyzed use a consistent set of assumptions of relative scarcity of investment funds, foreign exchange, and labor with policies and objectives to be reflected (Collyer & Warren, 2009). Rapid changes in the environment, including tools and methods, and attempts to innovate, act to push the project to the right, increasing unknowns.

According to the study of Zwikael project knowledge areas is major to project favorable outcome. When the highest utilization of project knowledge areas related processes significantly improves project success (Zwikael, 2009). Passey conveys that IT project management employs project management principles and tools that should be part of a methodology, which consists of gradual activities, processes, tools, controls and deliverables defined for the entire project. Thus, IT projects failures are avoided (Passey, 2015).

IT project management includes overseeing projects for software development, hardware installations, network upgrades, cloud computing and virtualization rollouts, business analytics and data management projects and implementing IT services. The purpose of IT projects is not the technology itself, but accomplishment of business goals and objective with customer satisfaction (Passey, 2015).

According to the global information technology report in 2012, in the past decade IT technology revolution is so fast that it changes the way the society lives and the economic growth. As we live in the global world, the sense of immediateness and constant accessibility is redefining the relationships between and across nations, businesses, and governments. Societies that recognize the potential opportunities that new technologies look forward to better prepared to gain the potential benefits and weather the risks of the technologies. The potential benefits IT indicates improvements in innovation performance and raises in productivity in those technology firms have been widely documented and organized. Moreover, improvements in people’s well-being, enabled products in healthcare or environmental solutions, are transforming the quality of life of many of citizens (Schwab, 2012).

From international data corporation (IDC) report on improving IT project outcomes, 25% of IT projects experience outright failure. Based on the same report, up to 50% of the projects require material rework, and 20% to 25% do not provide return on investment (ROI). Project management is documented to be a major cause of IT project failure (Alami, 2016) .

Advances in information technology and intensified competition in the marketplace have contributed to the timely delivery of products and services. This in turn has contributed to increased benefits and reduced costs of IT project management. Depending on the size, scope, and complexity of a project, a number of conflicting elements challenge IT project management. Project delivery may address the equally important need for reliability in delivering the project as promised, as well as its cost and benefits. A project manager needs to clearly identify the project’s goals and objectives in support of the organizational mission and vision statements so that the project team could focus on the effectiveness of project planning and execution before looking for efficiency measures.

The customer needs change because of rapid change in technologies. Broad and sophisticated projects planning take longer time horizon. During planning such projects, technologies features and capability to integration should be clearly defined with the project team therefore; the change of task on the course of execution would not be difficult to integrate new technologies. IT project management deals with a variety of issues. It ends up interfacing with many other aspects of an organization, such as business administration, human resources, finance and other departments within the organization and entities that are outside of the business.

Many of the job titles for IT professionals reflect the different technologies required to hold those positions. The difference of IT knowledge of professionals may result incompatibility of technologies. According to (Schwalbe, 2016), Hardware specialists might not understand the language of database analysts, and vice versa. Security specialists may have a hard time communicating with business analysts. People within the same IT job function often do not understand each other because they use different technology. Another problem with diverse technologies is that many of them change rapidly. A project team might be close to finishing a project when it discovers a new technology that can greatly enhance the project and better meet long-term business needs. New technologies have also shortened the time frame many businesses have to develop, produce, and distribute new products and services. This fast-paced environment requires equally fast paced processes to manage and produce IT projects and products (Schwalbe, 2016, p. 65) .

Standish Group in 2013 provided an in-depth study reporting that 43% of projects demonstrated issues such as being late, over budget, or having less than the required features and functions; additionally, 18% failed due to cancellation before completion or delivery (Obeidat & North, 2014). Another study conducted in the UK by Oxford University and Computer Weekly in 2003 reported, that only 16% of the IT projects reviewed were considered successful (Obeidat & North, 2014).

According to (Souer & Cuthberston, 2003, p. 6) requirements specification, system integration and testing are each undertaken in between approximately 70% and 80% of all IT projects. In effect, the IT project retains a core of its established character despite waves of technological and commercial change. IT is a main factor for change in economy of a country. This economic change take up the organization in modern way of adapting technologies and changing work conditions and reinventing themselves this resolve competitiveness and dynamic business environments

IT transformation programs serve the specific purpose of increasing the IT based competitiveness of a firm and are therefore often observed in competitive and dynamic business environments. Within such competitive and dynamic business contexts, a key mechanism for achieving IT-based competitiveness is building an IT platform that provides stable core operations and the necessary foundation for competing with IT. The rapid transformation in information technologies combines changes in business processes changes cost and cost benefit relationship, and the feasibility of doing specific things in particular ways follow IT organizations, concerned with standards for identifying, analyzing, and minimizing risks for their IT activities (Talet, 2014).

IT risks plan in terms of likelihood and consequences to identify the most important risks. Talet states that the top five risks personnel shortfalls, unreasonable project schedule and budget, unrealistic expectations, incomplete requirements and diminished window of opportunity due to late delivery of projects. In particular, managing stakeholders’ expectations is a specific risk treatment that helps to manage several key IT risks (Talet, 2014) .

The most common reason for project failure is poor project planning, specifically, risks were not addressed or the project plan was weak (Whittaker, 1999). According to the study of (Cuthberston & Sauer, 2003), 97% of project managers have participated in managing the necessary requirements and specifications. They spend about 12.3% of their time in planning. However, the practice of planning is not always good. Planning skills are also considered as important for successful project managers ( (Cuthberston & Sauer, 2003).

For developing a business continuation plan one should carry out a risk assessment that assists project team to make better decisions, communication and to resolve any risk. In IT projects one of the most important goals of risk management plan is to accomplish by better securing the informatics systems that store, process, or transmit organizational information; by enabling management to make well-informed risk management decisions to justify the expenditures that are part of an IT budget and by assisting management in authorizing the IT systems, on the basis of the supporting documentation resulting from the performance of risk management

The knowledge and experience of the project team in planning affect planning performance, the planning stage of the project is crucial to capture and analyze customer or user requirements and to ensure the project teams’ understanding. Management support is also documented as an important factor for project success. In project planning, management support means the involvement and support of top management, functional departments and the sponsor.

# **CHAPTER THREE**

# **3. RESEARCH METHODOLOGY**

## **3.1 Research Approach and Design**

### **3.1.1 Research approach**

Qualitative focus is on discovering true inner meanings and new insights. Qualitative research is very widely applied in practice. Quantitative research can be conducted a survey that addresses numerical measurement (Zikmund & Babin, 2009, p. 134). Quantitative research method is insufficient to understand the context or setting in which people behave in contrast, qualitative research makes up as well. The researcher bases the inquiry on the assumption that collecting diverse types of data best provides an understanding of a research problem. The study begins with a broad survey questionnaire in order to generalize results to a population in quantitative approach and then in a second phase, focuses on qualitative, open-ended interviews to collect detailed views from participants (Creswell, 2003) .

In this study, both qualitative and quantitative research approaches are used. The research design was used to develop more complete understanding of the research problem by obtaining different but complementary data from both the survey questionnaire and interview questions, this method was used for validation purpose. Both the qualitative and quantitative data were collected concurrently and analyzed independently then the results were summarized and interpreted in combination.

### **3.1.2 Research design**

A research design is a master plan that specifies the methods and procedures for collecting and analyzing the needed information. A research design provides a framework or plan of action for the research. Exploratory, descriptive, and causal research are three major types of business research projects. The clarity with which the decision situation is defined determines whether exploratory, descriptive, or causal research is most appropriate. When the decision is very ambiguous, or the interest is on discovering new ideas, exploratory research is most appropriate. Descriptive research attempts to paint a picture of the given situation by describing characteristics of objects, people, or organizations. Causal research identifies cause-and-effect relationships (Zikmund & Babin, 2009, p. 71). Because of the above arguments and the objective of the study which is practice and challenges of IT project management planning, descriptive research design is appropriate for the study which is mainly focus on what practices are found and answers the research questions.

## **3.2 Variables, Data Sources and Data Collection Methods**

A variable is an attribute of an object of study. This study is based on descriptive type of research therefore it describes the challenges and practice of the variables.

Both primary and secondary data collection methods are used in order to acquire data for this study. First, secondary data is gathered through recorded data from the organization. Moreover the researcher use referencing materials like books, articles, and from online platforms to get a thorough understanding about the study. Theoretical framework of this study was built based on the knowledge gaining from these sources. The primary source for the study is survey from unstructured interview and questionnaire.

## **3.3 Population and Sampling**

From the scope of the study, the researcher takes the population who participate on IT projects of the organization. as mentioned on the introductory part of the paper, the organization participates on different IT projects includes software development , datacenter, network infrastructure and electronics security teams and take sampling from the participants who are working on IT project planning. For this study, the target population includes: project management of the organization has 19 ongoing projects 5 software development projects, 6 data center projects, 6 network infrastructure projects and 2 electronics security project. Project management team has 20 group member including the project management team leader, business analysis team has 10 members software development team has 76 team members, data center team has 24 team members, network infrastructure team has 68 members and electronics security team has 13 team members.

* Project management team: the team identifies the requirement of the projects, plan the project based on the requirement, monitor and control the progress of the project and give information direction for all project participants. The team structured 1 Project management team leader and 19 project managers.
* Business analysis team: supplies information for project management team by analyzing the quality of product and service from the requirement. The team members include 1 business analysis team leader and 9 business analysts.
* Software implementation and development team: the team uses customer requirement as a base for development of projects and develop software solution for the request. The team includes 1 software development team leader and sub teams: 18 SW development members, 21 implementation team members, 4 quality assurance members, 6 solution engineering (architecture) members, 13 user interface /user experience designing (UI/UX) members, 13 data base designing (back end) members.
* Data center team: the team identifies requirements for development of data center, identify data center environment and ensuring all customer server environments are secure, operational, and highly available, monitor software and hardware products. The team includes 1 data center team leader and 23 team members.
* Network infrastructure team: the team comprises hardware and software, systems and devices, and enables communication between users, services, applications and processes. The team is responsible for effective communication and service between users, applications, services and devices. The team includes 1 network infrastructure team and 67 members .
* Electronics security team: the team identifies the requirement and structured with sub teams: Video Surveillance System, access control and fire and safety system. The team has one team leader and 12 members.

### **3.3.1 Sampling strategy/design**

According to (Kothari, 2004) a sample design is a master plan that prevails a sample from a population. In this paper the sample was designed with studying what kind of population are involved from the list of target population which is the participants who work on IT project planning. As mentioned on the above (target population and sampling), the organization involved in to variety of IT projects and characterized as project management team, business analysis team, software development team ,data center team, network infrastructure team and electronics team. IT planning participants will be obtained from each IT project teams. Therefore, for the study simple random sampling is appropriate method for taking a sample from a given population (Zikmund & Babin, 2009).

### **3.3.2 Sample size determination**

For this study the sample will be determined based on simple random sampling method from the different departments of the organization which are IT project participants. The researcher divide the IT project participants (population) in to six groups of teams in the form of their department then from each group take IT projects planning team as a sample. Due to the group involvement of on IT project planning some groups are taken the whole population as a sample because the groups from (project management and business analysis teams) are directly involved on IT project planning for the other team sample is taken from each team members who involve IT project planning .

Table 3.1 Sample size determination using simple random sampling technique

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Sections Name** | **No. of Population** | **Sample** |
| 1 | Project management team | 20 | 20 |
| 2 | Business analyst team | 10 | 10 |
| 3 | Software development team | 76 | 22 |
| 4 | Network infra-structure team | 68 | 9 |
| 5 | Data center team | 24 | 7 |
| 6 | Electronics security team | 23 | 4 |
|  | **Total** | 221 | 72 |

### **3.3.3 Data collection instrument and method**

From study, descriptive research design requires the characteristics of a particular individual, situation or organization. Surveys are concerned with describing, recording, analyzing and interpreting conditions that either exist or existed. Survey used when the information is obtained from a defined group to get an idea of the situation or characteristics among the study (Kothari, 2004). Thus, the researcher used survey method to collect primary data using questionnaire survey and data was collected from the sample from mangers and all teams who involve on IT projects planning. In addition, semi structured interviews such as face-to-face or telephone interviews were used to get qualitative data and perceive the required information about the participants thought and behavior.

## **3.4 Methods of Data Analysis and presentation**

Data analysis a process of applying statistical or logical techniques to evaluate or analyze data with the goal of discovering useful information suggesting conclusion and supporting decision making. It is a process of obtaining raw data and converting it into information useful for drawing inference or decision (Zikmund & Babin, 2009). Raw data was recorded from respondents indicated from the sample. For qualitative data, the raw data are in the words of the respondent interview, whereas for quantitative data, the sample response that the actual number checked in the questionnaire. The collected data was analyzed using descriptive statistic method that describes the present practices and challenges.

Data representation for this study was used in the form of tables and graphs. These methods makes visual illustration of the data and makes it easy to understand. Data that is obtaining from questionnaire was interpreted using statistical package for the social sciences (SPSS) and analyzed the reliability of the data. Survey method of data analysis was used for data collection from targeted population about their opinions behavior or knowledge. The qualitative data was gather with the base of characteristics and relevance of the information from the respondents and presented on explanation of sentences and phrases.

# **CHAPTER FOUR**

# **4. RESULTS AND DISCUSSION**

This chapter describes the results with presentation, analysis and interpretation of the collected data from the questionnaire. In this study 72 questionnaires was specifically distributed to respondents’ who participated on planning of IT projects at INSA. The participants include project management team, business analysis team, software development team, network infrastructure team, data center team and electronic security team. The questionnaires used five level of agreement (1= strongly disagree, 2=Disagree, 3=Neutral, 4= Agree and 5= Strongly agree) and analyzed the participants’ level of agreement and test for the reliability on SPSS.

## **4.1 Reliability test**

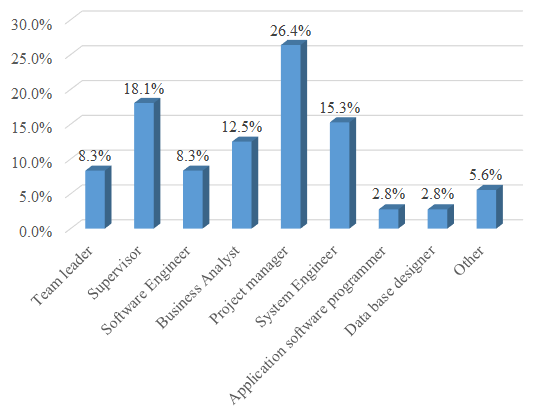
In this study, the reliability test is measured by Cronbach’s Alpha. The Cronbach Alfa for the questions measures above 0.7 this measure the respondents’ indicators are all consistent in their measurements and it is acceptable. The following table indicates the reliability measures:

Table 4.1 Reliability test

|  |  |  |
| --- | --- | --- |
| **Reliability test** | **Cronbach’s Alpha** | **No. of Items** |
| Planning project management processes | 0.791 | 9 |
| Continuous improvement of project planning | 0.790 | 8 |
| IT project planning challenges | 0.725 | 10 |
| IT projects planning management practices | 0.838 | 37 |
| All questions | 0.815 | 64 |

## **4.2 Respondents’ profile**

This section indicate the respondents’ profile i.e. the respondents’ working position ,respondents’ gender, respondents’ educational level and respondents’ years of experience which is presented in the form of graph and tabular form.

Figure 4.1 Respondents’ work position

As shown on the above figure of the respondents that participate on IT project planning :6 (8.3%) were team leaders, 13(18.1%) were supervisors, 6 (8.3%) were software engineers, 9 (12.5%) were business analysts, 19(26.4%) were project managers, 11(15.3%) were system engineer, 2(2.8%) were application software programmer, 2(2.8%) were database designer and 4(5.6%) were in other work position. The finding revealed that in planning of IT projects all project managers and business analysts are participated and all team leaders and supervisors of each departments are involved.

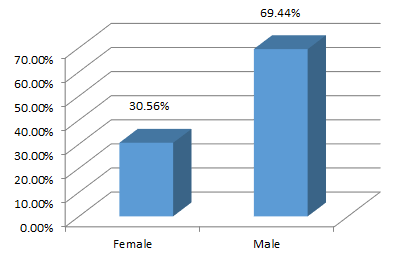


Figure 4.2 Respondents’ gender

From the above figure the respondents that participate on IT project planning 22(30.56%) were female and 50 (69.4 %) were male. The finding shows that there is male dominance on planning of IT projects in the organization.

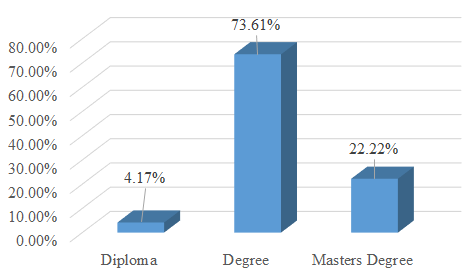


Figure 4.3 Respondents’ education level

The analysis see in figure 4.3 the respondents who participate on planning IT projects 3 (4.17%) have diploma, 53(73.61%) have degree and 16(22.22%) have masters degree. Therefore the majority of the participants in planning IT projects are first degree holders.

Table 4.2 Respondents’ years of experience

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Years** | **Frequency** | **Percent** | **Valid Percent** | **Cumulative Percent** |
| 3 | 5 | 6.94% | 6.9 | 6.9 |
| 4 | 15 | 20.83% | 20.8 | 27.8 |
| 5 | 13 | 18.06% | 18.1 | 45.8 |
| 6 | 11 | 15.28% | 15.3 | 61.1 |
| 7 | 8 | 11.11% | 11.1 | 72.2 |
| 8 | 3 | 4.17% | 4.2 | 76.4 |
| 9 | 1 | 1.39% | 1.4 | 77.8 |
| 10 | 7 | 9.72% | 9.7 | 87.5 |
| 11 | 4 | 5.56% | 5.6 | 93.1 |
| 12 | 3 | 4.17% | 4.2 | 97.2 |
| 13 | 2 | 2.78% | 2.8 | 100.0 |
| Total | 72 | 100.0 | 100.0 |  |

The above table 4.2 indicates the analysis of the IT projects participants years of experience thus 5 (6.94%) of the respondents has 3 years of experience, 15(20.83%) were 4 years of experience, 13(18.06%) were 5 years of experience, 11(15.28%) were 6 years of experience, 8(11.11%) were 7 years of experience, 3(4.17%) were 8 years of experience, 1(1.39%) was 9 years of experience, 7(9.72%) were 10 years of experience, 4(5.56%) were 11 years of experience, 3(4.17%) were 12 years of experience and 2(2.78%) were 13 years of experience. The finding revealed that the majority of the respondents experienced between 4-6 years.

**4.3 Planning project management processes**

This section provide the analysis result for planning project management processes.

Table 4.3 Planning project management processes

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Projects are plan, prepare before starting of project Job, and communicate with project team. | 12(16.7)\* | 37(51.4) | 5(6.9) | 15(20.8) | 3(4.2) | 2.44 | 1.124 |
| The project management plan and documents are updated frequently as project progress. | 11(15.3) | 26(36.1) | 10(13.9) | 25(34.7) | - | 2.68 | 1.111 |
| The project management plan aligns with organizational policy, procedures and guidelines. | 13(18.1) | 26(36.1) | 16(22.2) | 16(22.2) | 1(1.4) | 2.53 | 1.074 |
| Project management plan are defined as a guideline and follow the standards. | 5(6.9) | 20(27.8) | 8(11.1) | 31(43.10 | 8(11.1) | 3.24 | 1.181 |
| Project managers are well trained to lead the projects. | 9(12.5) | 23(31.9) | 15(20.8) | 21(29.2) | 4(5.6) | 2.83 | 1.151 |
| Organizational culture influences the project management plan. | 4(5.6) | 9(12.5) | 7(9.7) | 37(51.4) | 15(20.8) | 3.69 | 1.109 |
| Organizational structure influences the project management plan | 3(4.2) | 10(13.9) | 7(9.7) | 36(50.0) | 16(22.2) | 3.72 | 1.091 |
| Organizational process influences the project management plan | 5(6.9) | 10(13.9) | 16(22.2) | 26(36.1) | 15(20.8) | 3.5 | 1.175 |
| The organization’s top management ensures project management plan. | 9(12.5) | 23(31.9) | 8(11.1) | 28(38.9) | 4(5.6) | 3.84 | 1.202 |

12(16.7)\*12*=frequency 16.7= percent (%), this applies for all table*

This analysis table 4.3 showed the mean result for the following project management planning processes: projects are plan, prepare and communicate with project team (2.44), the project management plan and documents are updated frequently as project progress (2.68), the project management plan aligns with organizational policy, procedures and guidelines (2.53), project management plan are defined as a guideline and follow the standards (3.24), project managers are well trained to lead the projects (2.83), organizational culture influences the project management plan (3.69), organizational structure influences the project management plan (3.72), organizational process influences the project management plan (3.5) and the organization’s top management ensures project management plan (3.84). The finding shows that project plans are prepared and communicate with project teams below average thus the information was not transparent, there is a guideline for planning projects however it was average range to follow the guideline and standards, the project management plan was strong coordination with organizational culture, structure and processes and the top managers are ensures the project management plan.

## **4.3 continuous improvement of project planning**

Table 4.4 Continuous improvement of project planning

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Projects are planned to meet its goals and objectives. | 6(8.3)\* | 20(27.8) | 10(13.9) | 31(43.1) | 5(6.9) | 3.13 | 1.15 |
| Projects planned with schedule. | 17(23.6) | 37(51.4) | 7(9.7) | 11(15.3) |  | 2.17 | 0.964 |
| Projects planned with available budget. | 19(26.4) | 27(37.5) | 8(11.1) | 17(23.6) | 1(1.4) | 2.56 | 1.154 |
| The planned projects meet quality standards. | 2(2.8) | 10(13.9) | 19(26.4) | 35(48.6) | 6(8.3) | 3.46 | 0.934 |
| The organization practices continuous improvement in projects from lesson learned in past projects for planning. | 15(20.8) | 33(45.8) | 12(16.7) | 12(16.7) |  | 2.29 | 0.985 |
| Project Participants are highly committed. | 19(26.4) | 35(48.6) | 7(9.7) | 9(12.5) | 2(2.8) | 2.17 | 1.048 |
| There is proper data management for projects. | 13(18.1) | 21(29.2) | 9(12.5 | 20(27.8) | 9(12.5) | 2.88 | 1.342 |
| There is regular schedule updates. | 4(5.6) | 28(38.9) | 22(30.6) | 17(23.6) | 1(1.4) | 2.76 | 0.927 |

*6(8.3)\*, 6=frequency 8.3 = percent (%), this applies for all table*

The analysis of continuous improvement on project planning revealed the following results: projects meet their operational performance goals and objectives (3.13), Projects are finished with the planned schedule (2.17), Projects are finished with the planned budget (2.56), The planned projects meet quality standards ( 3.46), The organization practices continuous improvement in projects from lesson learned in past projects (2.29), Project participants are highly committed (2.17), There is proper data management for projects (2.88) and there is regular schedule updates ( 2.76). The finding shows that projects meet the organizational goals and objective somehow however projects was not finished on the schedule and budget baseline, the planned projects strongly meet quality standards and the organization had some improvements from lesson learned from previous projects and data management and project participants were poorly dedicated for specific project.

## **4.4 IT project planning challenges**

The following table represents survey questions regarding challenges of project planning in IT projects.

Table 4.5 IT project planning challenges

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Strongly Disagree** | **Disagree** | **Neutral** | **Agree** | **Strongly Agree** | **Mean** | **Std. Deviation** |
| Lack of understanding the projects requirements | 11(15.3)\* | 27(37.5) | 12(16.7) | 17(23.6) | 5(6.9) | 2.69 | 1.194 |
| Lack of preparation (No budget, no sponsor) | 6(8.3) | 16(22.2) | 7(9.7) | 34(47.2) | 9(12.5) | 3.33 | 1.199 |
| Lack of risk assessment plan | 5(6.9) | 30(41.7) | 9(12.5) | 24(33.3) | 4(5.6) | 2.89 | 1.120 |
| Lack of resources (unskilled person on the field, budget..) | 5(6.9) | 15(20.8) | 8(11.1) | 31(43.1) | 13(18.1) | 3.44 | 1.209 |
| High cost of trainings and consultancy | 2(2.8) | 18(25.0) | 20(27.8) | 23(31.9) | 9(12.5) | 3.26 | 1.061 |
| Lack of knowledge on new technologies | 4(5.6) | 13(18.1) | 8(11.1) | 35(48.6) | 12(16.7) | 3.53 | 1.138 |
| Lack of compatibility of IT systems | 4(5.6) | 16(22.2) | 17(23.6) | 32(44.4) | 3(4.2) | 3.19 | 1.016 |
| Lack of communication with stakeholders | 3(4.2) | 17(23.6) | 12(16.7) | 35(48.6) | 5(6.9) | 3.31 | 1.043 |
| Lack of communication between project managers and project teams | 7(9.7) | 34(47.2) | 6(8.3) | 16(22.2) | 9(12.5) | 2.81 | 1.252 |
| Delay of government procedures for procurement | 2(2.8) | 8(11.1) | 5(6.9) | 37(51.4) | 20(27.8) | 3.9 | 1.023 |

*11(15.3)\*, 11=frequency 15.3 = percent (%), this applies for all table*

The analysis for challenges of IT project planning reviled the following mean results: lack of understanding the projects requirements (2.69), lack of preparation (3.33), lack of risk assessment plan (2.89), lack of resources (3.44), high cost of trainings and consultancy (3.26), lack of knowledge on new technologies (3.53) , lack of compatibility of IT systems (3.19), lack of communication with stakeholders(3.31), lack of communication between project managers and project teams(2.81), delay of government procedures for procurement (3.9). The finding shows that somehow understand the IT project requirements but there is lack of preparation for planning all the requirements due to shortage of skilled expertise , new technologies and IT system compatibility is an issue as technologies and vendors change this will result high training cost. Moreover, government policy and procedures of procurement is the biggest challenge on planning projects.

**4.5 IT projects planning management practice**

This section requires results and discussion on the planning practice of project management knowledge areas. Which includes planning integration management, planning scope management, planning schedule management, planning resource management, planning cost management, planning quality management, planning communication management, planning risk management, planning procurement management and planning stakeholders management.

Table 4.6 Project integration management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Project teams gather data from brain storming | 3(4.2)\* | 12(16.7) | 14(19.4) | 30(41.7) | 13(18.1) | 3.53 | 1.10 |
| Project teams gather data from interviews | 7(9.7) | 11(15.3) | 17(23.6) | 33(45.8) | 4(5.6) | 3.22 | 1.091 |
| Project teams planned to coordinate with vendors and stakeholders | 4(5.6) | 15(20.8) | 15(20.8) | 35(48.6) | 3(4.2) | 3.25 | 1.017 |

*3(4.2)\*, 3=frequency 4.2 = percent (%), this applies for all table*

From the analysis of project integration planning practice the mean value revealed that : project teams gather data from brain storming (3.53), project teams gather data from interviews (3.22) and project teams planned to coordinate with vendors and stakeholders (3.25). the finding shows that the project teams devoted to gathered data from brain storming and interviews and made plan to strong coordination with stakeholders and vendors.

Table 4.7 Project scope management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| The scope of IT projects is clearly defined | 15(20.8)\* | 36(50.0) | 6(8.3) | 13(18.1) | 2(2.8) | 2.32 | 1.085 |
| IT project teams uses strength, weakness, opportunities and threats (SWOT) analysis for planning scope of the projects | 3(4.2) | 28(38.9) | 20(27.8) | 20(27.8) | 1(1.4) | 2.83 | 0.934 |
| IT Projects uses work breakdown structure (WBS) to define total scope of the project | 2(2.8) | 16(22.2) | 15(20.8) | 31(43.1) | 8(11.1) | 3.38 | 1.041 |

*15(20.8)\*, 15=frequency 20.8 = percent (%), this applies for all table*

From the analysis of project scope planning practice the mean result revealed that :The scope of IT projects is clearly defined (2.32), IT project teams uses strength, weakness, opportunities and threats (SWOT) analysis for planning scope of the projects (2.83) and IT Projects uses work breakdown structure (WBS) to define total scope of the project(3.38). the finding shows that the scope of IT projects poorly defined it is below the average level, somehow the team uses SWOT analysis and the team used WBS structure for define overall scope of the project.

Table 4.8 Project schedule management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Project teams estimate schedule based on the requirement | 2(2.8)\* | 17(23.6) | 18(25.0) | 29(40.3) | 6(8.3) | 3.28 | 1.01 |
| The project teams define the project activities with time baseline | 2(2.8) | 14(19.4) | 9(12.5) | 36(50.0) | 11(15.3) | 3.56 | 1.06 |
| The project teams determine dependencies of activities | 2(2.8) | 17(23.6) | 20(27.8) | 29(40.3) | 4(5.6) | 3.22 | 0.967 |
| The project team estimate resources for each activity | 3(4.2) | 35(48.6) | 10(13.9) | 23(31.9) | 1(1.4) | 2.78 | 0.996 |
| Project teams uses project management software to show the sequence of activities as well as the milestone | 6(8.3) | 15(20.8) | 3(4.2) | 32(44.4) | 16(22.2) | 3.51 | 1.278 |

*2(2.8)\*,* *2=frequency 2.8 = percent (%), this applies for all table*

From the analysis of project schedule planning practice the mean result revealed that: Project teams estimate schedule based on the requirement (3.28), project teams define the project activities with time baseline (3.56), project teams determine dependencies of activities (3.22), project teams estimate resources for each activity (2.78) and the team uses project management software to show the sequence of activities as well as the milestone (3.51). The finding shows most respondents agreed that project teams used project management software for planning schedule, define activities and milestone however the teams have poor estimation of resources for projects.

Table 4.9 Project resource plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| The project teams determine the resource needed based on budget | 3(4.2)\* | 25(34.7) | 16(22.2) | 26(36.1) | 2(2.8) | 2.99 | 1.000 |
| The resources are scheduled based on expected availability | 7(9.7) | 32(44.4) | 20(27.8) | 12(16.7) | 1(1.4) | 2.56 | 0.933 |
| There are skilled expertise on the IT field | 6(8.3) | 42(58.3) | 10(13.9) | 12(16.7) | 2(2.8) | 2.47 | 0.964 |
| There are updated technologies for IT projects | 2(2.8) | 38(52.8) | 13(18.1) | 19(26.4) | - | 2.68 | 0.901 |

*3(4.2)\*, 3=frequency 4.2 = percent (%), this applies for all table*

From the analysis of project resource planning practice the mean result revealed that the project teams determine the resource needed based on budget (2.99), the resources are scheduled based on expected availability (2.56), there are skilled expertise on the IT field (2.47), there are updated technologies for IT projects (2.68). The finding shows that there is poor allocation of resources thus without consideration of resources projects are planned, expertise on the field are below average and the technologies are allocated on presence functions.

Table 4.10 Project cost plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| IT Projects cost is estimated based on budget | 4(5.6)\* | 28(38.9) | 16(22.2) | 21(29.2) | 3(4.2) | 2.88 | 1.034 |
| Project teams use analog estimation for estimating cost | 3(4.2) | 12(16.7) | 9(12.5) | 41(56.9) | 7(9.7) | 3.51 | 1.021 |
| Project teams use parametric modeling for estimating cost | 4(5.6) | 25(34.7) | 26(36.1) | 13(18.1) | 4(5.6) | 2.83 | 0.979 |
| Project teams use project management software for estimating cost | 9(12.5) | 28(38.9) | 20(27.8) | 13(18.1) | 2(2.8) | 2.6 | 1.016 |
| Project teams use bottom up estimating of cost | 9(12.5) | 34(47.2) | 8(11.1) | 18(25.0) | 3(4.2) | 2.61 | 1.12 |

*4(5.6)\*, 4=frequency 5.6 = percent (%), this applies for all table*

From the analysis of project cost planning practice the mean result revealed that**:** IT Projects cost is estimated based on budget (2.88), Project teams use analog estimation for estimating cost (3.51), project teams use parametric modeling for estimating cost (2.83), Project teams use project management software for estimating cost (2.6), Project teams use bottom up estimating of cost (2.61). The finding shows that the cost estimated was un proportional with budget, most of time the project teams used analog estimation for cost and project management estimating cost and bottoms up approach for estimating cost is poorly applied.

Table 4.11 Project quality management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| IT projects planned based on quality standards | 4(5.6)\* | 4(5.6) | 13(18.1) | 37(51.4) | 14(19.4) | 3.74 | 1.021 |
| Project teams use Cost benefit analysis for comparison cost of quality | 7(9.7) | 33(45.8) | 16(22.2) | 13(18.1) | 3(4.2) | 2.61 | 1.029 |
| Project teams use benchmarking if similar projects have done on the past and utilize best practice regarding quality and apply on new projects | 7(9.7) | 15(20.8) | 11(15.3) | 28(38.9) | 11(15.3) | 3.29 | 1.238 |
| Project teams use design of experiments to identify the various factors which influence the quality of a product | 5(6.9) | 31(43.1) | 16(22.2) | 16(22.2) | 4(5.6) | 2.76 | 1.055 |

*4(5.6)\*, 4=frequency 5.6 = percent (%), this applies for all table*

From the analysis of project quality planning practice the mean result revealed that**:** IT projects planned based on quality standards (3.74), project teams use cost benefit analysis for comparison cost of quality (2.61), project teams use benchmarking if similar projects have done on the past and utilize best practice regarding quality and apply on new projects (3.29) and project teams use design of experiments to identify the various factors which influence the quality of a product (2.76). The finding shows that IT projects planned is strongly followed quality standards.

Table 4.12 Project communication management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Project teams communicate with all stakeholders | 6(8.3)\* | 23(31.9) | 19(26.4) | 21(29.2) | 3(4.2) | 2.39 | 1.056 |
| Project procedure information plan clearly defined | 2(2.8) | 28(38.9) | 15(20.8) | 23(31.9) | 4(5.6) | 2.99 | 1.028 |
| Project teams meets based on schedule | 10(13.9) | 32(44.4 | 13(18.1) | 12(16.7) | 5(6.9) | 2.58 | 1.135 |

*6(8.3)\*, 6=frequency 8.3 = percent (%), this applies for all table*

From the analysis of project communication planning practice the mean result revealed that**:** Project teams communicate with all stakeholders (2.39), Project procedure information (content level of detail, convention/ definition, update) plan clearly defined (2.99) and Project teams meets based on schedule (2.58). The finding shows somehow project teams meet with stakeholders and the project procedures were clearly defined however the teams are not met frequently.

Table 4.13 Project risk management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Risk assessment template for IT projects is used for listing of risks and to tracking risks | 6(8.3)\* | 32(44.4 | 18(25.0) | 16(22.2) |  | 2.61 | 0.928 |
| IT Project teams uses probability and impact matrix to prioritize risks | 6(8.3) | 23(31.9) | 29(40.3) | 11(15.3) | 3(4.2) | 2.75 | 0.96 |
| Project teams identify the risk by SWOT analysis from previous projects | 5(6.9) | 24(33.3) | 13(18.1) | 28(38.9) | 2(2.8) | 2.97 | 1.061 |

*6(8.3)\*, 6=frequency 8.3 = percent (%), this applies for all table*

From the analysis of project risk planning practice the mean result revealed: risk assessment template for IT projects is used for listing of risks and to tracking risks (2.61), IT Project teams uses probability and impact matrix to prioritize risks (2.75) and project teams identify the risk by SWOT analysis from previous projects (2.97). The finding shows the team poorly usage of risk management template and impact and probability matrix but somehow use SWOT analysis for identifying risks.

Table 4.14 Project procurement management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Project teams gather data from market research | 4(5.6) | 20(27.8) | 25(34.7) | 21(29.2) | 2(2.8) | 2.96 | 0.956 |
| Project teams analyze data for decision making | 2(2.8) | 31(43.1) | 13(18.1) | 23(31.9) | 3(4.2) | 2.92 | 1.017 |
| Project teams define the statement of work | 4(5.6) | 13(18.1) | 24(33.3) | 31(43.1) |  | 3.14 | 0.909 |

*4(5.6)\*, 4=frequency 5.6 = percent (%), this applies for all table*

From the analysis of project procurement planning practice the mean result revealed: Project teams gather data from market research (2.96), Project teams analyze data and make or buy decision of products or services (2.92) and project teams define the statement of work by describing the procurement item in detail to allow prospective sellers to determine if they are capable of providing the item (3.14). The finding shows that the team uses market research and analyze data and make or buy decision for procurement planning and moreover the project teams defines statement of the work for procure materials for projects.

Table 4.15 Project stakeholder management plan practice

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | Strongly Disagree | Disagree | Neutral | Agree | Strongly Agree | Mean | Std. Deviation |
| Expert judgment applied for planning stakeholders | 9(12.5)\* | 24(33.3) | 10(13.9) | 23(31..9) | 6(8.3) | 2.9 | 1.224 |
| Project teams analyze data by assumption and constraint analysis | 6(8.3) | 15(20.8) | 22(30.6) | 21(29.2) | 8(11.1) | 3.14 | 1.13 |
| Project teams prioritize / rank stakeholders for decision making | 4(5.6) | 9(12.5) | 11(15.3) | 40(55.6) | 8(11.1) | 3.54 | 1.034 |
| Project teams plan meetings with stakeholders | 2(2.8) | 6(8.3) | 10(13.9) | 41(56.9) | 13(18.1) | 3.79 | 0.934 |

*9(12.5)\*, 9=frequency 12.5 = percent (%), this applies for all table*

From the analysis of project stakeholder management planning practice the mean result revealed: Expert judgment applied for planning stakeholders (2.9), Project teams analyze data by assumption and constraint analysis (3.14), project teams prioritize / rank stakeholders for decision making (3.54) and project teams plan meetings with stakeholders (3.79). The finding shows for planning stakeholders somehow expert judgment is used and project teams rank suitable stakeholders for projects and plan meetings with stakeholders.

Additionally, the findings of the structured interview guide were used to verify the findings of the quantitative results to have more in-depth knowledge of the practice and challenges of in planning of IT project as follows. The respondents were graduate and undergraduate level with 4 to 13 years of experience and the team leaders interviewed to concur the data from questionnaire. The employees perception about planning was the tool to improve to finish the project within schedule, scope, and budget accordingly.

# **CHAPTER FIVE**

# **5. SUMMARY, CONCLUSION & RECOMMENDATION**

## **5.1 Summary**

The main purpose of the study was to assess the practice and challenges in planning of information technology projects at information network security agency. The research was descriptive type of research, a mixed type of research approach (quantitative and qualitative) was applied and for sample selection, simple random sampling technique was employed. 72 respondents who participate on IT project planning were involved on the questionnaire and interview survey. The fining revealed that there was a schedule planning for projects for defining every activity of projects however there was delay on delivering IT projects due to lack of detail project scope definition, in poor communication with team and stakeholders, delay of government procedure for procurement, project participant commitment , unskilled expertise in the field and high training cost. The researcher suggests that it is better to give better deliberation for scope of the project planning thus once the scope is clearly define the project teams know what to do and the resource planning to form accountability in all aspect of the project, and provide planning for enough training programs for the existing and new technologies. On planning of IT projects there are things should be considered from the technology compatibility with old technologies with interfacing systems therefore training employees worked on the IT system would deliver quality service and product. Moreover applying updated tools techniques of planning will result to follow the gaps and barriers of each project phases and the team would be able to make corrective action on the problems.

## **5.2 Conclusion**

Given the critical importance of project delivery and reliability as well as the economic rationale in project, planning should be applied properly. The study analyzes project planning processes, continuous process in planning and practices of IT projects planning on project management knowledge areas.

The findings revealed that even though some tools and techniques were deployed in project planning processes; there was the lack of updating project management plan and documents as project progress, the alignment of project management plan with organizational policy procedures and guidelines, influence of organizational culture, structure and process, the approach of top management for planning projects. IT project planning has the following challenges; understanding the projects requirements, preparation of projects, risk assessment plan, resource availability of projects, high cost of trainings and consultancy, knowledge on new technologies, of compatibility of IT systems, communication with stakeholders, between project managers and project teams and delay of government procedures for procurement. From the interview and questionnaire response IT project teams somehow understand the requirement but when they ask for trainings and for new technology update, it takes high costs to fulfill the requests. Therefore, as technologies change rapidly the planning budget should be under consideration to cop up with new technologies. The finding also showed that IT projects participants were not engaged to finish the projects this leads to the organization to lose its expertise in the field that affect the resource planning.

As mentioned on the literatures many information technology projects exceed their financial budget, take longer than expected to implement, and also do not meet the functional requirements desired with all stakeholders. Hence Ethiopia as a developing country transforming information technology the organization involves on national level IT projects but there is a gap on delivering the projects on time. The study outline the practices and challenges of IT projects planning and address the practices of project management knowledge areas therefore the organization should apply and practice planning techniques and tools for each project management knowledge areas for deliver projects on the required time with quality product and service.

## **5.3 Recommendations**

The following recommendations are proposed by the researcher in order to improve IT projects planning methodology.

* From the analysis of results and findings there is communication gap for top management and project teams, to achieve organizational goals and objectives managers needed encourage technical teams to participate on planning their projects and get inputs from them. Discuss about the project requirements, discuss other ways to be more efficient and effective, decide with the best way plan the project.
* The organization needed to identify distinctive cultural and organizational obstacles that accompany planning IT projects.
* In planning IT projects there should be a consideration during collection of data related to tasks, milestones, and resource allocation. IT project teams needed to contemplate schedule planning with the resource availability. Project teams needed to approach from different angles: what resources are available for specific project, understand what clients are expecting and define available expertise and budget to precede projects.
* The organization needed to define the scope for all stakeholders. Therefore there would be a clear understanding of accountability and responsibility of project work.
* Rapid change in technology needs a capacity building for project participants therefore training individuals needed to be consider on the plan of IT project.
* Cost estimation for IT projects needed to consider with the technology change, license update, and system compatibility and vendor management.
* IT project team needed to identify the possible risks form lesson learned from past and plan risks to enhance the opportunities for effective delivering the projects.
* Communication between the project team and stakeholders should be plan with schedule thus; there would be transparent understanding of the work progress.
* The organization needed to practice planning tools and techniques to improve the IT project delivery.
* The organization involved on national level projects thus the organization needed to develop national level procedures, guidance and standards for IT projects.

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# **APPENDIX 1: QUESTIONNAIRE**

**ST. MARY’S UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

**TITLE OF THE THESIS: PRACTICES AND CHALLENGES OF INFORMATION TECHNOLOGY PROJECTS PLANNING: THE CASE OF SELECTED GOVERNMENTAL ORGANIZATION, ADDIS ABEBA , ETHIOPIA**

**Dear respondent,**

Thank you for your willingness to participate in this study as a respondent. This questionnaire is used to collect data for the partial fulfillment of Master of Project Management. The researcher assures you that the information you provide used only for academic research purpose and anonymity of the respondent maintained throughout the research process.

**SECTION A: GENERAL INFORMATION**

1. What is your position in your IT Project planning?
2. Team leader b. Supervisor c. Software Engineer d. Business analyst e. Project manager f. System engineer g. Application software programmer h. Database designer i. If other please specify……………………………………….

1. What is your gender?
2. Female b. Male

1. What is the level of your education?
2. Diploma b. Degree c. Master’s degree

d. If other please specify ……………………………………….

1. How many years of experience? …….. Years

**SECTION B: IT PROJECTS PLANNING PRACTICES AND CHALLENGES**

**In your experience of your organization, please indicate the practices and challenges occur on the IT project planning by taking the boxes and specify the appropriate.**

|  |
| --- |
| The following statements are issues related to IT projects planning. Please Mark the Appropriate Answer by (√), Using numbers indicates (**1= Strongly disagree , 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree**) |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Practices of IT Projects planning** | | **Degree of Agreement** | | | | | |
| 1. **Planning project management processes** | | **1** | **2** | **3** | | **4** | **5** |
|  | Projects are planned and prepared before starting of project Job and communicated to the project team. |  |  |  | |  |  |
|  | The project management plan and documents are updated frequently as project progress. |  |  |  | |  |  |
|  | The project management plan aligns with organizational policy, procedures and guidelines. |  |  |  | |  |  |
|  | Project management plan are defined as a guideline and follow the standards. |  |  |  | |  |  |
|  | Project managers are well trained to lead the projects. |  |  |  | |  |  |
|  | Organizational culture influences the project management plan. |  |  |  | |  |  |
|  | Organizational structure influences the project management plan |  |  |  | |  |  |
|  | Organizational process influences the project management plan |  |  |  | |  |  |
|  | The organization’s top management ensures project management plan. |  |  |  | |  |  |
| 1. **Continuous improvement of project planning** | | | | | | | |
|  | Projects planned with schedule. |  |  | |  |  |  |
|  | Projects planned with available budget. |  |  | |  |  |  |
|  | The planned projects meet quality standards. |  |  | |  |  |  |
|  | The organization practices continuous improvement in projects from lesson learned in past projects for planning. |  |  | |  |  |  |
|  | Project participants are highly committed. |  |  | |  |  |  |
|  | There is proper data management for projects. |  |  | |  |  |  |
|  | There is regular schedule updates. |  |  | |  |  |  |
| 1. **Challenges of IT project management planning** | | | | | | | |
|  | Lack of understanding the projects requirements. |  |  | |  |  |  |
|  | Lack of preparation (No budget, no sponsor). |  |  | |  |  |  |
|  | Lack of risk assessment plan. |  |  | |  |  |  |
|  | Lack of resources (unskilled person on the field, budget..) |  |  | |  |  |  |
|  | High cost of trainings and consultancy. |  |  | |  |  |  |
|  | Lack of knowledge on new technologies. |  |  | |  |  |  |
|  | Lack of compatibility of IT systems. |  |  | |  |  |  |
|  | Lack of communication with stakeholders. |  |  | |  |  |  |
|  | Lack of communication between project managers and project teams. |  |  | |  |  |  |
|  | Delay of government procedures for procurement. |  |  | |  |  |  |
| 1. **IT project planning practices** | | | | | | | |
| 1. **Project integration management plan** | | | | | | | |
| 1.1 | Project teams gather data from brain storming. |  |  | |  |  |  |
| 1.2 | Project teams gather data from interviews. |  |  | |  |  |  |
| 1.3 | Project teams planned to coordinate with vendors and stakeholders. |  |  | |  |  |  |
| 1. **Project scope management plan** | | | | | | | |
| 2.1 | The scope of IT projects is clearly defined. |  |  | |  |  |  |
| 2.2 | IT project teams uses strength, weakness, opportunities and threats (SWOT) analysis for planning scope of the projects. |  |  | |  |  |  |
| 2.3 | IT Projects uses work breakdown structure (WBS) to define total scope of the project |  |  | |  |  |  |
| 1. **Project Schedule Planning** | | | | | | | |
| 3.1 | Project teams estimate schedule based on the requirement. |  |  | |  |  |  |
| 3.2 | The project teams define the project activities with time baseline. |  |  | |  |  |  |
| 3.3 | The project teams determine dependencies of activities. |  |  | |  |  |  |
| 3.4 | The project team estimate resources for each activity. |  |  | |  |  |  |
| 3.5 | The team uses project management software to show the sequence of activities as well as the milestone. |  |  | |  |  |  |
| 1. **Project Resource Planning** | | | | | | | |
| 4.1 | The project teams determine the resource needed based on budget. |  |  | |  |  |  |
| 4.2 | The resources are scheduled based on expected availability. |  |  | |  |  |  |
| 4.3 | There are skilled expertise on the IT field. |  |  | |  |  |  |
| 4.4 | There are updated technologies for IT projects. |  |  | |  |  |  |
| 1. **Project Cost Planning** | | | | | | | |
| 5.1 | IT Projects cost is estimated based on budget. |  |  | |  |  |  |
| 5.2 | Project teams use analog estimation for estimating cost. |  |  | |  |  |  |
| 5.3 | Project teams use parametric modeling for estimating cost. |  |  | |  |  |  |
| 5.4 | Project teams use project management software for estimating cost. |  |  | |  |  |  |
| 5.5 | Project teams use bottom up estimating of cost. |  |  | |  |  |  |
| 1. **Project Quality Planning** | | | | | | | |
| 6.1 | IT projects planned based on quality standards. |  |  | |  |  |  |
| 6.2 | Project teams use Cost benefit analysis for comparison cost of quality. |  |  | |  |  |  |
| 6.3 | Project teams use benchmarking if similar projects have done on the past and utilize best practice regarding quality and apply on new projects. |  |  | |  |  |  |
| 6.4 | Project teams use design of experiments to identify the various factors which influence the quality of a product. |  |  | |  |  |  |
| 1. **Project Communication Planning** | | | | | | | |
| 7.1 | Project teams communicate with all stakeholders |  |  | |  |  |  |
| 7.2 | Project procedure information plan clearly defined |  |  | |  |  |  |
| 7.3 | Project teams meets based on schedule |  |  | |  |  |  |
| 1. **Project Risk Planning** | | | | | | | |
| 8.1 | Risk assessment template for IT projects is used for listing of risks and to tracking risks. |  |  | |  |  |  |
| 8.2 | IT Project teams uses probability and impact matrix to prioritize risks. |  |  | |  |  |  |
| 8.3 | Project teams identify the risk by SWOT analysis from previous projects. |  |  | |  |  |  |
| 1. **Project Procurement Planning** | | | | | | | |
| 9.1 | Project teams gather data from market research. |  |  | |  |  |  |
| 9.2 | Project teams analyze data and make or buy decision of products or services. |  |  | |  |  |  |
| 9.3 | Project teams define the statement of work by describing the procurement item in detail to allow prospective sellers to determine if they are capable of providing the item. |  |  | |  |  |  |
| 1. **Project stakeholder management planning** | | | | | | | |
| 10.1 | Expert judgment applied for planning stakeholders. |  |  | |  |  |  |
| 10.2 | Project teams analyze data by assumption and constraint analysis. |  |  | |  |  |  |
| 10.3 | Project teams prioritize / rank stakeholders for decision making. |  |  | |  |  |  |
| 10.4 | Project teams plan meetings with stakeholders. |  |  | |  |  |  |

# **APPENDIX2: INTERVIEW**

**ST. MARY’S UNIVERSITY**

**SCHOOL OF GRADUATE STUDIES**

**TITLE OF THE THESIS: Practices and challenges of Information Technology projects planning in the case of selected governmental organization, Addis Abeba , Ethiopia**

**Dear respondent,**

Introduction: These interview questions are used to collect data for the partial fulfillment of Master of Project Management. The researcher assures you that the information you provide will be used only for academic research purpose and anonymity of the respondent maintained throughout the research process. Thank you for your cooperation.

**SECTION A: RESPONDENT’S PROFILE**

1. What is your Position in the organization?

2. How many years of experience in the organization?

3. What is your educational level?

**SECTION B: IT PROJECTS PLANNING PRACTICES AND CHALLENGES**

In your experience, please indicate the IT projects planning practices and challenges.

1. What kind of IT projects does your organization involved?
2. Do your organization use temples for IT project planning? If yes please specify. If not why?
3. Does IT Projects meet their operational performance goals and objectives? If not why?
4. Does IT Projects are finished with the planned schedule? If not why?
5. Does IT Projects are finished with the planned budget? If not why?
6. Does the planned projects meet quality standards? If not why?
7. The organization practices continuous improvement in projects from lesson learned from previous projects? If not why?
8. Is there proper data management for projects?
9. Are employees trained on projects as the technology changes? If no why?
10. Have you use tools and techniques for project planning? If yes, what kind of tools and techniques do you apply?

# **APPENDIX 3: REALIABILITY TEST RESULTS**

**Reliability test table for all questions**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case Processing Summary** | | | |
|  |  | N | % |
| Cases | Valid | 72 | 100.0 |
|  | Excludeda | 0 | 0.0 |
|  | Total | 72 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| 0.834 | 64 |

**Reliability test table for project planning management process**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case Processing Summary** | | | |
|  |  | N | % |
| Cases | Valid | 72 | 100.0 |
|  | Excludeda | 0 | 0.0 |
|  | Total | 72 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| 0.791 | 9 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item-Total Statistics** | | | | |
|  | **Scale Mean if Item Deleted** | **Scale Variance if Item Deleted** | **Corrected Item-Total Correlation** | **Cronbach's Alpha if Item Deleted** |
| A1 | 25.13 | 32.618 | 0.412 | 0.780 |
| A2 | 24.89 | 32.889 | 0.397 | 0.782 |
| A3 | 25.04 | 30.886 | 0.598 | 0.756 |
| A4 | 24.33 | 31.972 | 0.435 | 0.777 |
| A5 | 24.74 | 32.394 | 0.417 | 0.780 |
| A6 | 23.88 | 30.280 | 0.629 | 0.751 |
| A7 | 23.85 | 33.596 | 0.347 | 0.788 |
| A8 | 24.07 | 29.558 | 0.645 | 0.747 |
| A9 | 24.64 | 31.671 | 0.448 | 0.776 |

**Reliability test table for continuous improvement of project planning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case Processing Summary** | | | |
|  |  | N | % |
| Cases | Valid | 72 | 100.0 |
|  | Excludeda | 0 | 0.0 |
|  | Total | 72 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| 0.790 | 8 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item-Total Statistics** | | | | |
|  | **Scale Mean if Item Deleted** | **Scale Variance if Item Deleted** | **Corrected Item-Total Correlation** | **Cronbach's Alpha if Item Deleted** |
| B1 | 18.08 | 25.542 | 0.245 | 0.808 |
| B2 | 19.04 | 23.224 | 0.599 | 0.752 |
| B3 | 18.85 | 22.075 | 0.582 | 0.752 |
| B4 | 17.75 | 24.894 | 0.424 | 0.777 |
| B5 | 18.92 | 22.641 | 0.651 | 0.743 |
| B6 | 19.04 | 22.238 | 0.645 | 0.742 |
| B7 | 18.33 | 23.127 | 0.371 | 0.794 |
| B8 | 18.44 | 23.743 | 0.566 | 0.758 |

**Reliability test table for challenges of IT project planning**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case Processing Summary** | | | |
|  |  | N | % |
| Cases | Valid | 72 | 100.0 |
|  | Excludeda | 0 | 0.0 |
|  | Total | 72 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| 0.725 | 10 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item-Total Statistics** | | | | |
|  | **Scale Mean if Item Deleted** | **Scale Variance if Item Deleted** | **Corrected Item-Total Correlation** | **Cronbach's Alpha if Item Deleted** |
| C1 | 29.67 | 30.845 | 0.328 | 0.713 |
| C2 | 29.03 | 31.971 | 0.238 | 0.727 |
| C3 | 29.47 | 31.379 | 0.318 | 0.713 |
| C4 | 28.92 | 28.641 | 0.504 | 0.682 |
| C5 | 29.10 | 30.314 | 0.444 | 0.694 |
| C6 | 28.83 | 29.887 | 0.438 | 0.694 |
| C7 | 29.17 | 30.563 | 0.448 | 0.694 |
| C8 | 29.06 | 29.124 | 0.570 | 0.675 |
| C9 | 29.56 | 33.856 | 0.083 | 0.754 |
| C10 | 28.46 | 29.181 | 0.579 | 0.674 |

**Reliability test table for IT project planning practices**

|  |  |  |  |
| --- | --- | --- | --- |
| **Case Processing Summary** | | | |
|  |  | N | % |
| Cases | Valid | 72 | 100.0 |
|  | Excludeda | 0 | 0.0 |
|  | Total | 72 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

|  |  |
| --- | --- |
| **Reliability Statistics** | |
| Cronbach's Alpha | N of Items |
| 0.838 | 37 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Item-Total Statistics** | | | | |
|  | **Scale Mean if Item Deleted** | **Scale Variance if Item Deleted** | **Corrected Item-Total Correlation** | **Cronbach's Alpha if Item Deleted** |
| D11 | 106.99 | 217.253 | 0.202 | 0.838 |
| D12 | 107.82 | 212.601 | 0.305 | 0.835 |
| D13 | 107.85 | 209.878 | 0.378 | 0.833 |
| D21 | 108.25 | 213.345 | 0.324 | 0.834 |
| D22 | 107.74 | 214.197 | 0.355 | 0.834 |
| D23 | 107.19 | 210.243 | 0.446 | 0.831 |
| D31 | 107.29 | 212.069 | 0.398 | 0.832 |
| D32 | 107.01 | 215.028 | 0.278 | 0.836 |
| D33 | 107.35 | 213.159 | 0.378 | 0.833 |
| D34 | 107.79 | 215.012 | 0.301 | 0.835 |
| D35 | 107.06 | 215.377 | 0.207 | 0.838 |
| D41 | 107.90 | 211.751 | 0.354 | 0.833 |
| D42 | 108.01 | 210.014 | 0.514 | 0.830 |
| D43 | 107.85 | 216.807 | 0.172 | 0.839 |
| D44 | 107.89 | 211.030 | 0.494 | 0.830 |
| D51 | 107.69 | 211.426 | 0.409 | 0.832 |
| D52 | 107.06 | 211.603 | 0.409 | 0.832 |
| D53 | 107.74 | 215.239 | 0.299 | 0.835 |
| D54 | 107.97 | 215.182 | 0.287 | 0.835 |
| D55 | 107.96 | 208.576 | 0.462 | 0.830 |
| D61 | 106.83 | 216.986 | 0.225 | 0.837 |
| D62 | 107.96 | 223.477 | 0.228 | 0.843 |
| D63 | 107.28 | 213.696 | 0.264 | 0.836 |
| D64 | 107.81 | 226.046 | 0.075 | 0.845 |
| D71 | 107.68 | 215.094 | 0.277 | 0.836 |
| D72 | 107.58 | 212.077 | 0.389 | 0.833 |
| D73 | 107.99 | 208.014 | 0.473 | 0.830 |
| D81 | 107.96 | 215.139 | 0.323 | 0.834 |
| D82 | 107.82 | 209.868 | 0.503 | 0.830 |
| D83 | 107.60 | 213.596 | 0.324 | 0.834 |
| D91 | 107.61 | 217.424 | 0.229 | 0.837 |
| D92 | 107.65 | 210.624 | 0.444 | 0.831 |
| D93 | 107.43 | 212.220 | 0.443 | 0.832 |
| D101 | 107.67 | 208.620 | 0.415 | 0.832 |
| D102 | 107.43 | 214.277 | 0.279 | 0.836 |
| D103 | 107.03 | 214.140 | 0.316 | 0.835 |
| D104 | 106.78 | 217.809 | 0.221 | 0.837 |