UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE BUILDING OF A TRAINING CENTER FOR TEACHERS IN PARAMARIBO, SURINAME

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This Final Graduation Project was approved by the University as partial fulfillment of the requirements to opt for the Master in Project Management (MPM) Degree

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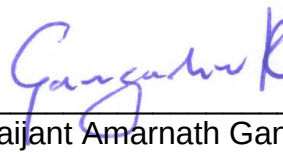

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DEDICATION

The love for parents. We are so busy growing up that we forget that they too are growing old.

This research project is dedicated to my parents, my mother Kamla Gangadin-Dewnarain and my father Siamkisoor Gangadin, for being there for me and supporting me. I am very thankful to them for their understanding during my journey of this amazing study and research experience.

ACKNOWLEDGMENTS

A sincere gratitude goes out to my tutor for this project, Mr. Carlos Brenes, for his support and understanding throughout this work. Our mutual interaction has led to the finalization of this document.

I would also like to thank all members from the Project Coordination Unit of the Ministry of Education Research and Science for their time and support in the information gathering process which I consider as a very valuable contribution.

Lastly, I would like to thank my colleagues at work for their words of motivation in achieving this milestone.

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ABBREVIATIONS AND ACRONYMS

AOP	-	Annual Operating Plan
BEIP	-	Basic Education Improvement Program
CENASU	-	Centrum voor Nascholing in Suriname (Center for Continuing Education in Suriname
CPI	-	Cost Performance Index
CV	-	Cost Variance
FGP	-	Final Graduation Project
IADB	-	Inter-American Development Bank
MOESC	-	Ministry of Education Science and Culture
PCU	-	Project Coordination Unit
PEU	-	Project Executing Unit
PMBOK	-	Project Management Body of Knowledge
PMI	-	Project Management Institute
PMO	-	Project Management Office
POM	-	Program Operations Manual
PP	-	Procurement Plan
RBS	-	Risk Breakdown Structure
SPI	-	Schedule Performance Index
SV	-	Schedule Variance
TOR	-	Terms of Reference
WBS	-	Work Breakdown Structure

EXECUTIVE SUMMARY (ABSTRACT)

The Ministry of Education Science and Culture has received financing from donor organizations to strengthen the Education Sector through the execution of several projects. The Ministry itself does not have a dedicated PMO but executes all the projects through a PCU who is responsible for all these projects. This unit is being led by a Program Manager who oversees all the ongoing projects in the Education Sector. One of the programs currently in execution is the Basic Education Improvement Program (BEIP), in which one of the projects is the building of a training center for all teachers in Suriname.

As this program is top priority for the Ministry of Education, it is important to accomplish the scope, time and budget objectives set during the design of the program. As part of the identified problem, the project is behind schedule. As a result of this, an infrastructure consultant has been hired to coordinate the ongoing activities, however this approach is not efficient to manage an activity of this size and complexity. On the other hand, the Project Coordination Unit uses the standard tools to monitor and control the project, but it has proven not to be sufficient. For this reason and to successfully complete the project, a comprehensive Project Management Plan has to be developed, managed by the PCU, to guide the several phases involved in the construction of this building for teachers in Suriname.

The general objective for this Project is to develop a Project Management Plan for the Project Executing Unit of the Ministry of Education, Science and Culture, in accordance with the standards of the Project Management Institute, to manage the building of a training centre. The specific objectives are: to create a project charter to formally authorize the project manager with the authority to apply resources to the project; to construct a scope management plan to ensure that it includes all the work required to succesfully complete the project; to construct a schedule management plan to support the development, monitoring and controling of the

project schedule ensuring the project ends within the scheduled time frame; to create a cost management plan toplan, structure and control the project budget ensuring the project is completed within the approved budget; to create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence; to develop a stakeholder management plan to identify all project stakeholders to ensure they are involved in all decision making activities.

The methodology used for this research was analytical. The main sources used for gathering information included the Project Management Body of Knowledge 6th edition and interviews were held with the PCU project team, the Ministry of Education Science and Culture and the engineering firm. The information from these sources were analyzed and used to develop the subsidiary plans, which are parts of the Project Management Plan, for the building of a training center for teachers in Suriname.

The Project Management Plan developed using the PMBOK® Guide 6th Edition provided a new methodology for the project coordination unit (PCU) of MOESC to start creating a more thorough project management plan for other future infrastructure projects, to improve the way they would manage a project. It is recommended that the project team at the Project Coordination Unit considers using the documents and templates developed during the development of the Project Management Plan for the building of a training center for teachers in Suriname, as a basis for implementing a methodology for other future or ongoing projects. Furthermore, the management of the PCU should also implement a document management and storage system in which all project files are stored and could be easily retrieved for best practices and lessons learned for future Organizational process Assets.

1 INTRODUCTION

1.1. Background

The Ministry of Education Science and Culture (MOESC) has received financing from the Inter-American Development Bank to execute the Basic Education Improvement Program Phase II. This is a multi-phase program which the objective is to increase the learning outcomes of all primary school students and improving the internal efficiency of the education system in Suriname. This second phase will continue developing the curriculum of primary education, improving access to better schools and building capacity within the Ministry of Education Science and Culture. Within this Ministry, there is a Project Executing Unit that is responsible for the execution of this Program and has a lifecycle of 5 years.

In component 2 of this program, improve access to education, there is scheduled to build a training center for CENASU (in Dutch: Centrum voor Nascholing Suriname, English: Centre for Continuing Education in Suriname). This center provides teacher training to teachers in Suriname. At the moment it has no headquarters to carry out its daily operations and as a result lacks the adequate facilities for its trainers to lead training sessions for all teachers currently active in the education Sector in Suriname. This project was initially planned to be carried out during phase I of the program but due to budget constraints, it was moved to Phase II that is now in execution.

The BEIP project executing unit, which is responsible for this program, is now in the process of validating the final designs of the building. An Engineering firm has been hired and now is working on the finalizing of the design which will be presented to the Ministry of Education Science and Culture and the Project Sponsor through the Project Executing Unit for final approval. Within the PEU there is an infrastructure assistant assigned to coordinate all the activities related to infrastructure. It is expected that in order to bring this project to a success, a project management plan is needed to coordinate all activities from start to finish

for the building of this training center. This will be a great support not only for the infrastructure assistant but also for the project team as there are other projects that can benefit from the knowledge, experience and lessons learnt that will be generated during this project.

1.2. Statement of the problem

The project executing unit within MOESC has been in operation since phase 1 (2012), but with staff coming and going due to several political decisions. There is staff available for financial and procurement, but the output is still low. The project is behind schedule and for the Sponsor of the project it is important that this big project is monitored closely. However, there is an infrastructure consultant hired within the Project Executing Unit to coordinate infrastructure activities only. This approach is not efficient enough in order to manage a construction project of this size and complexity and to complete the project within the defined time constraint. It is very important that there is a project management plan in place and that the elements of this plan are developed to guide the Project Executing Unit that can make use of the several project management tools to track and monitor progress of this project.

1.3. Purpose

The Inter-American Development Bank which is the project sponsor, closely monitors the progress of all its project portfolios in Suriname. In order for the education sector to continue with Phase 3 of the program in the future, it is important that the current project is on track. Despite the importance to have a project manager in place with dedicated staff, the project can still get behind schedule due to several risks and mainly the lack of an adequate project management plan. In order to achieve project success with the new CENASU building the Project Management Team will develop a Project Management Plan that will support the project execution following the Project Management Best Practices, to have an oversight and take the right strategic decisions. Each stage

in the execution of this project should be monitored closely. This research proposal will analyze the Project Management Body of Knowledge guide to establish a Project Management Plan for the project team to support them with important aspects of the projects integration, scope, schedule, cost, risk, and stakeholder management plans.

1.4. General objective

To develop a Project Management Plan for the Project Executing Unit of the Ministry of Education, Science and Culture, in accordance with the Project Management Body of Knowledge Guide, to manage the building of a training center.

1.5. Specific objectives

1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.
3. To construct a schedule management plan to support the development of a project schedule, to monitor and control the project schedule ensuring the project ends within the scheduled time frame.
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is completed within the approved budget.
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence.
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.

2 THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

The Ministry of Education, Science and Culture is responsible for the education development in Suriname. Education is the basis for the development of the Surinamese Community (MOESC, 2016). This ministry is responsible for the execution of projects in the Education Sector through its organizational units.

2.1.1 Company/Enterprise background

The Government of Suriname has received financing from the Inter-American Development Bank to execute the project Second Basic Education Improvement Program (2nd BEIP). According to the loan contract and the design of the Program the Ministry of Education Science and Culture (MOESC) is the Executing Agency (Project Manual, 2016). In order to make this happen several technical units have been given the responsibility to execute this project in collaboration with the PCU (Project Coordination Unit). This unit is responsible for the execution of the project and putting all efforts to achieve the goals of this operation by coordinating the several components, consultancies, key stakeholders, payments, monitoring progress and results and also procurement of goods, services and works. To manage this project efficiently and effectively this unit consist of several project staff such as a Program Manager, Operation Officer, Financial Specialist, Financial Assistant, Monitoring and Evaluation Officer, Procurement Officer and an Infrastructure Assistant. The infrastructure assistant is responsible for coordinating all the infrastructure activities within this program. The construction of the CENASU building is one of the infrastructure activities that has already started and for which this graduation project will be focused on.

2.1.2 Mission and vision statements

The Project Coordination Unit (PCU) is currently developing its mission and vision statement. For now, this unit uses the mission and vision statement of the parent organization which is the Ministry of Education Science and Culture.

Mission Statement (Ministry of Education, Science and Culture, 2018):

Creating and maintaining:

- Conditions, facilities and resources for education and national development for the benefit of every citizen and resident of Suriname,
- To acquire knowledge, skills, standards and values,
- To participate effectively in the democratic society and the modern world
- Free participation in multicultural life with a highly developed environmental awareness
- Optimal participation in the socio-economic life of the country.

Vision statement (Ministry of Education, Science and Culture, 2018):

The vision of an ideal Surinamese person. The ideal Surinamese person / citizen is a person who:

- Is permeated with respect for human life because it is the foundation on which all other values must rest.
- Is emotionally secure (with a high degree of self-confidence and self-esteem), takes initiatives and is entrepreneurial.
- Sees ethnic, religious and other diversities as a source of strength and wealth.
- Is aware of the importance of living in harmony with the environment (environmental awareness).
- Has a strong appreciation for family, family and community ties, and for moral issues including responsibility and liability for himself and the community.
- Has a well-developed respect for our cultural heritage.
- Demonstrates versatile skills, independent and critical thinking, existing views and practices are under discussion and focused on application of knowledge and facts for solving problems.
- Demonstrates a positive attitude towards work and collaboration with others
- Develop economic and entrepreneurial spheres and other areas of life

- Exhibits a creative mind and embodies in its different forms and has the ability to handle his physical, mental, social and spiritual well-being control and contribute to the health and prosperity of the community.
- Cherishes the full development of each person, and differences and similarities between women and men as a source of mutual strength utilized
- Has a strong bond with its own country and people and orientates as a world citizen.

2.1.3 Organizational structure

The current organization structure of the Project Coordination Unit has been approved in 2016 as part of the Program Operations Manual (POM) in the initiation phase of the project SU-L1038. It consists of the following positions:

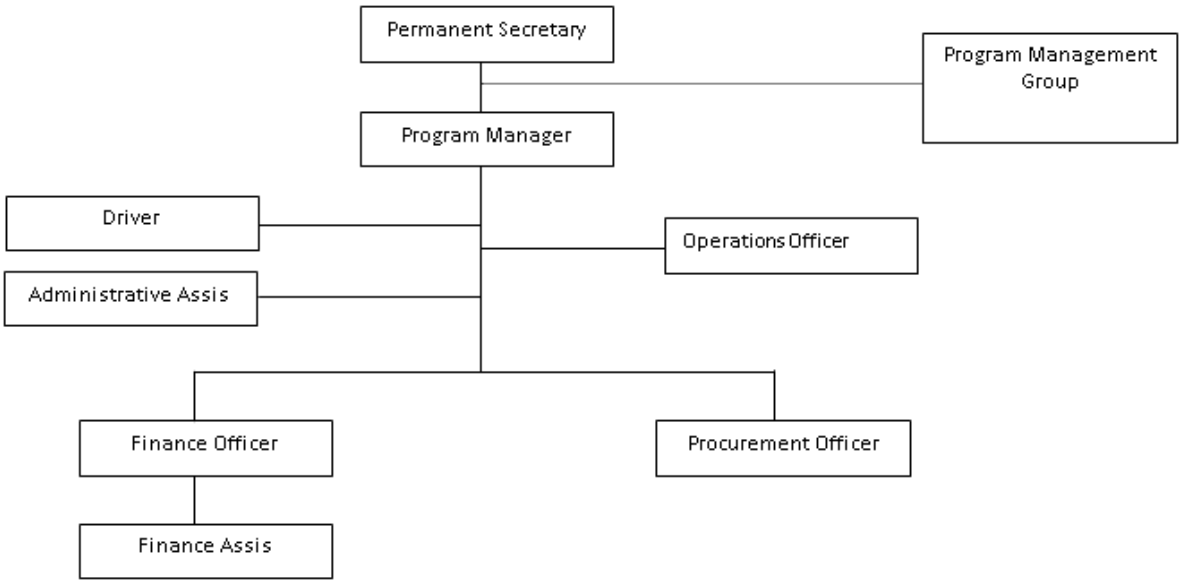


Figure 1 PCU Organizational structure (Program Operations Manual, 2016)

In this structure certain positions are not included as these were implemented in a later stage during execution but were approved by the Ministry. The project Coordination Unit reports to the Permanent Secretary of the Ministry of Education Science and research. The organizational structure of the ministry is the following:

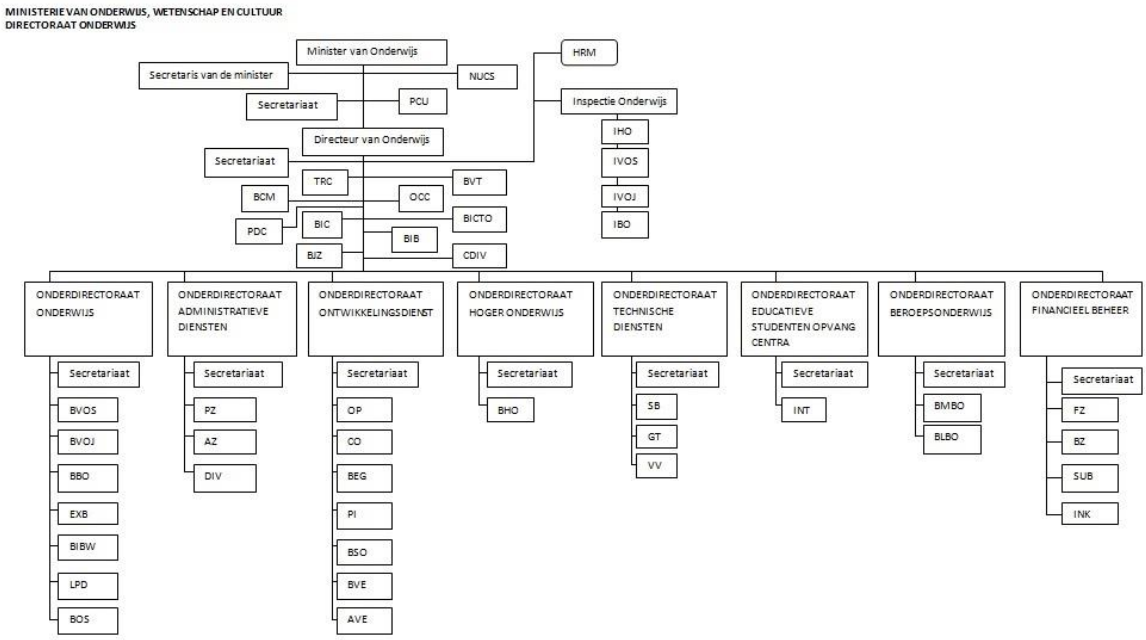


Figure 2 Organogram of MOESC (Ministry of Education Science and Culture, 2018)

2.1.4 Products offered

Through the past years, the coordination unit has been assigned to execute other projects as well. In general, this PCU performs functions that can be seen as a Project Management Organization (PMO). It also executes projects from other Multilateral organization that have made resources available to invest in the education sector. In relation to the current project, in execution and the objectives of this Graduation Project, the PCU performs the following tasks (Program Operations Manual, 2016):

- Foster an effective, empowered program execution team comprising the heads of relevant MOESC technical units, consultants supporting the implementation and other actors directly involved in the process of implementing the Program.
- Gather the necessary information to support the monitoring and evaluation of the operational performance and outputs to include collection of data, and site visits to ensure quality and consistency with program objectives (e.g. that the intended number of teachers are attending training sessions, etc.).

- Keep a management and tracking information system to monitor fulfillment of contractual clauses by firms and individual consultants hired by the Program, including outputs and delivery dates.
- Prepare and update the Annual Operations Plan (AOP), Procurement Plan (PP) and the multi-annual Project Execution Plan for submission and non-objection by the IDB in coordination with relevant MOESC technical units.
- Prepare semi-annual and annual reports for the MOESC and IDB relative to program finances; and progress regarding AOP and result framework indicators, among others; in accordance with agreed procedures and IDB policies.
- Procurement planning and execution, preparation of tender documents, notices, and contracts for the procurement of goods works and services.
- Maintain an adequate documentation filing system, ensuring all accounting records are maintained in a manner in keeping with best practices; among other tasks.
- Assist and coordinate with MOESC technical units, and other stakeholders the development and finalization of Terms of Reference (TOR), scheduling and management of consultancies, works and the delivery of goods, procurement of goods and services, financial management.

2.2 Project Management concepts

2.2.1 Project

A major function of an organization is to be able to manage its work, be it operations or project related (Camilleri, 2016). The work to be done can be part of operations, already ongoing, but on the other hand there are activities that need specific attention, and for which dedicated project staff or a project team is needed to carry out the work. What is a project? According to the Project Management Body of Knowledge Guide 6th edition, a project is a temporary endeavor undertaken to create a unique product, service or result.

Unique

Unique is referred to a product, a service, a component or a result. Projects are executed to meet objectives and to reach project success by producing deliverables within the given time and budget. A deliverable can be defined as a unique verifiable product or capability that is being performed in order to complete a process, phase or a project. For example, the CENASU building is a unique activity that has already started. It is part of component 2 from the BEIP Program for which was agreed with the Ministry of Education to be built.

Temporary

The temporary nature of a project is the fact that a project needs to be completed within an agreed period of time. Every project has a definite beginning and a definite end. Close attention should be given to the timeline in order not to get behind schedule. As an example, the preparatory work for the CENASU building has been started and is ongoing and should be finished by the end of next year.

Rolling wave planning

As the project moves forward, changes can be expected that will occur during execution that will influence the project. Projects drive change in organizations (Project Management Institute, 2017). It is important that the project manager makes the right decision on these changes. As an example, the project of study has already experienced changes in the design. The engineering firm made and estimate that was higher than the allocated budget. The project manager immediately validated this with the Minister and was advised to the engineering firm to present a design that is within the project budget. Also, some changes were proposed to the original changes in order to adjust the design.

2.2.2 Project management

Project management can be described as the application of knowledge, competencies, methods and tools to achieve the defined project tasks in order to satisfy stakeholder requirements and expectations from a project (Camilleri, 2016). Furthermore, project management is accomplished through the appropriate application of the project management processes identified for the project (Project Management Institute, 2017). In a project environment, project management can contribute to achieving the organizational goals.

According to Camilleri (2016), a formalized project management structure can facilitate the following:

- Clarification of the project scope,
- Agreement on objectives and goals,
- Identifying the resources needed,
- Ensuring accountability for results and performance,
- Encouraging the project team to focus on the final benefits to be achieved.

In addition, a study done by Roberts and Furlonger (2000) shows that when a proper project management methodology is being used, compared to other methodologies, it improves productivity by 20 to 30 percent.

The Project Coordination Unit is using the project management methodology, however in recent years this Unit got other projects assigned as well that equally requires attention, coordination and monitoring. When it comes to project success, the project team should ensure that all objectives are met in the end. This will enable continuity of projects in the education sector. Moreover, the Project Coordination unit has not the full capacity of managing all projects. At this moment and especially for the CENASU project, it is important that in an early stage a project management plan is developed to assist the Coordination Unit with monitoring and control. This will be of great benefit and can be applied to other big infrastructure projects that are scheduled to start later in the year.

2.2.3 Project life cycle

"A project life cycle is the series of phases that a project passes through from its start to its completion" (Project Management Institute, 2017). It forms the basic framework to manage a project and can be applied regardless of the type of project work that is being planned. It should be noted that there are 2 project life cycles known as the *predictive life cycle* and the *iterative life cycle*. In the predictive life cycle the 3 major constraints of the project, scope, time and cost, are determined in the early phases of the project. In the iterative life cycle, the project scope only is determined early in the project phases. Within the project life cycle, there are several phases associated with the development of a product, service or result (Project Management Institute, 2017). The development life cycle can be, besides, predictive and iterative life cycle, also incremental, adaptive, and a hybrid life cycle.

In figure 3, a graphical representation is given of a project life cycle.

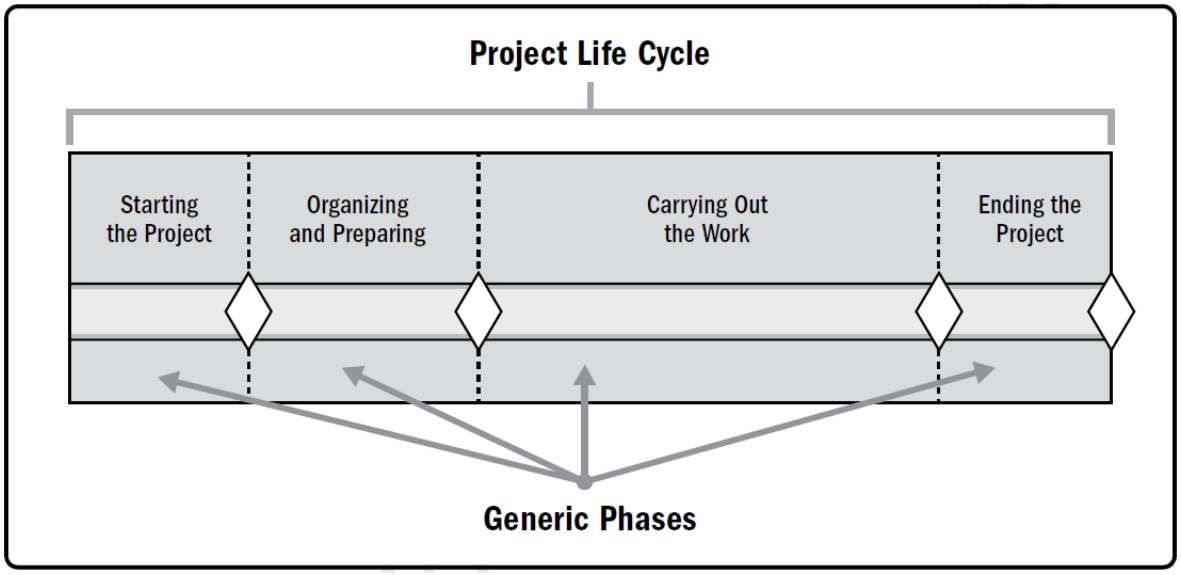


Figure 3 Project Life Cycle Reprinted from *A Guide to the Project management Body of Knowledge* (p. 548), Project Management Institute, 2017. Copyright 2017 by Project Management Institute, Inc.

As mentioned earlier in this paragraph a project life cycle is a series of phases that a project passes through. A project phase can be defined as a collection of logically

related project activities that culminates in the completion of one or more deliverables (Project Management Institute, 2017). PMI defines a deliverable as a unique verifiable, product, result or capability to perform a service that is required to be produced to complete a process, phase or project. In figure 4 we can see the level of effort within each process groups and the several project phases. In the following paragraph more in dept information will be given on the project management process groups.

The Project Coordination Unit (PCU) is aware of these phases and it has taken measures in the beginning of the program to assign a task officer to each of the program components. The infrastructure component has an infrastructure assistant who collaborates with other staff of the PCU to update on the progress and update the project documents as necessary. For example, the financial planning, the financial officer is consulted on when contract will be signed and when the first payment is expected. The procurement officer is consulted to update on the procurement planning with the Engineering firm for templates on preparing the tender documents.

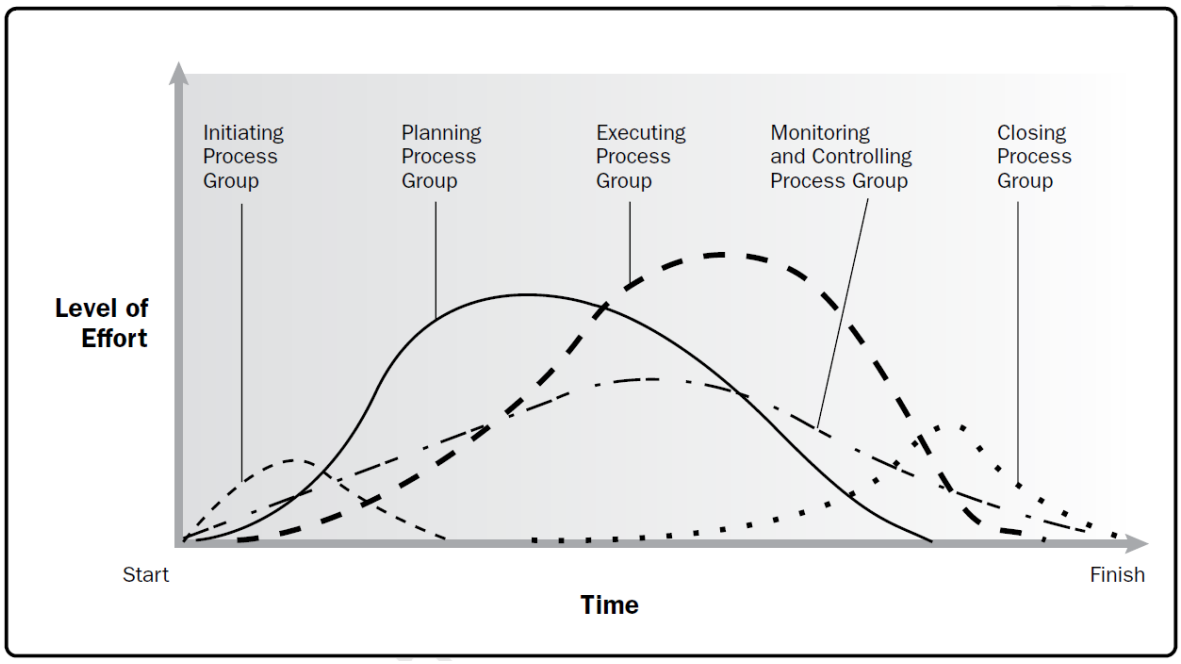


Figure 4 Process group interaction within a Phase or a Project. Reprinted from *A Guide to the Project management Body of Knowledge* (p. 555), Project Management Institute, 2017. Copyright 2017 by Project Management Institute, Inc.

2.2.4 Project Management Processes

The project life cycle is managed by executing a series of project management activities that are also known as project management processes (Project Management Institute, 2017). Each process produces one or more outputs from one of more inputs by using the right project management tool and technique. Project management is accomplished by the correct application of the project management processes. These processes are grouped into five categories which are called Process groups. These process groups are the following and are presented in figure 5:

- Initiating Process Group
- Planning Process group
- Executing Process group
- Monitoring and Control Process Group
- Closing Process Group

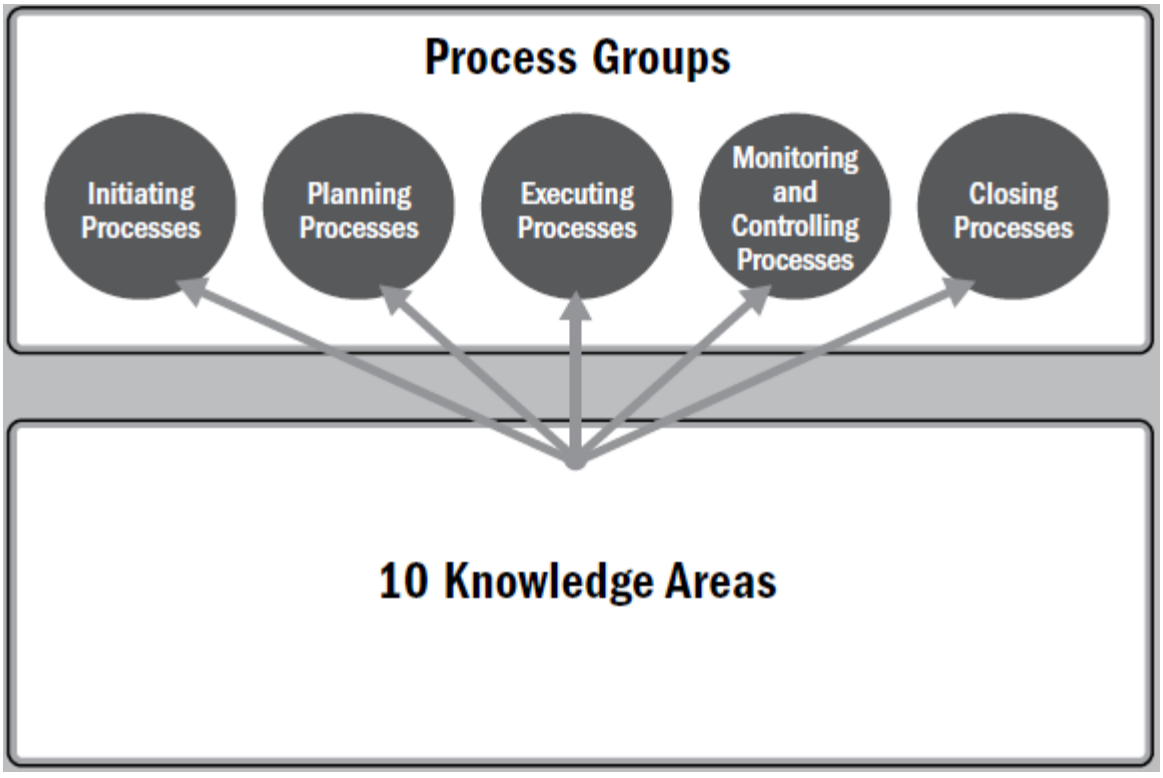


Figure 5 The 5 Process Groups. Reprinted from *A Guide to the Project Management Body of Knowledge* (p. 18), Project Management Institute, 2017. Copyright 2017 by Project Management Institute, Inc.

In order to develop the project management plan only processes from the initiating and planning process group will be consulted. The Project Management Plan will be a comprehensive document consisting of the subsidiary plans created during the initiating and planning stage of the CENASU building project.

There are 5 process groups consisting of 10 knowledge areas and 49 processes. In figure 6 the mind mapping can be found of the 10 knowledge areas and the 49 processes.

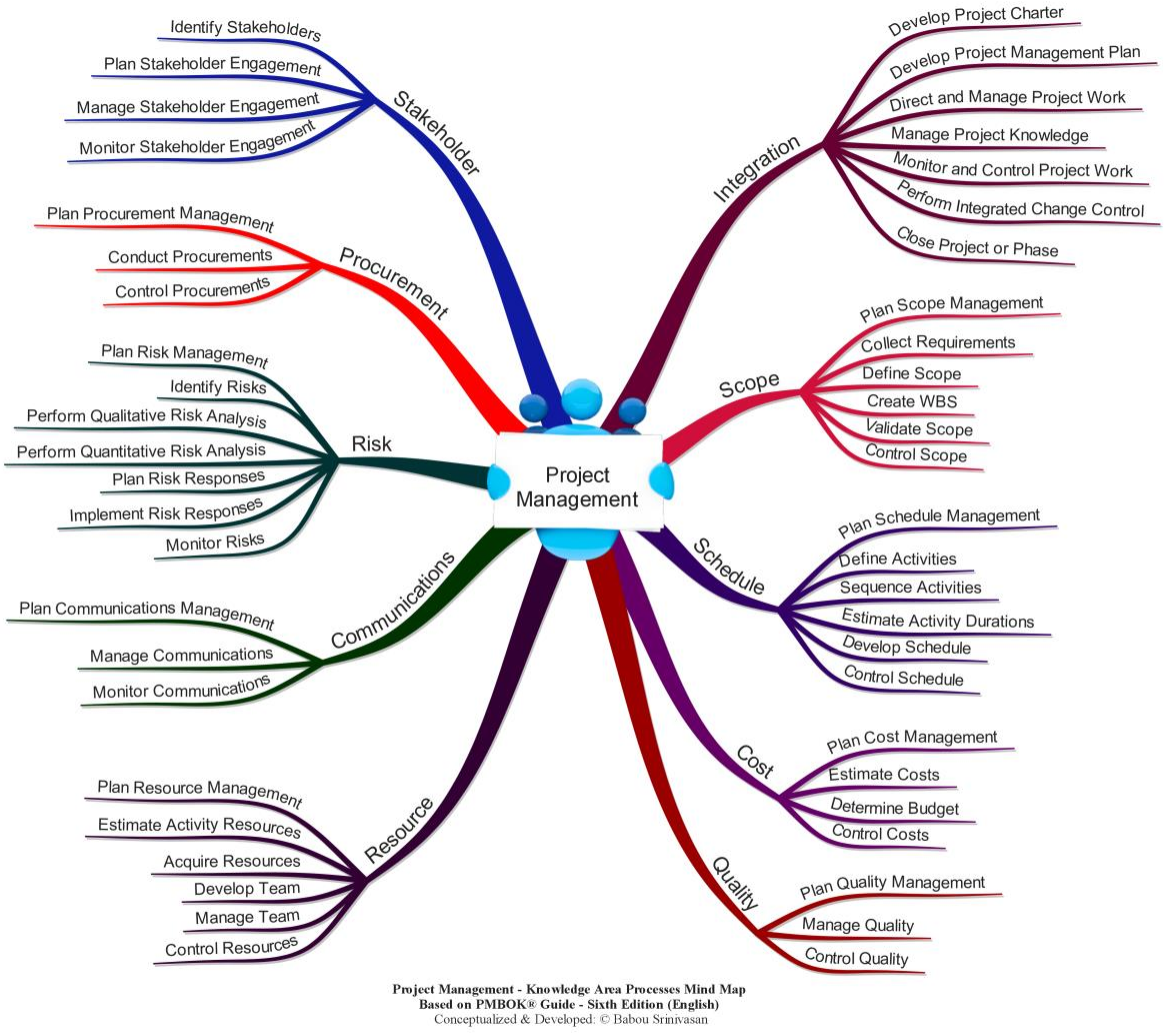


Figure 6 Mind Mapping of Project Management Knowledge Areas. Retrieved from https://pmleadershipchamps.com/project-management-mind-maps/based-on-pmbok-6th-edition/. Copyright 2018, Conceptualized and developed by Babou Srinivasan.

2.2.5 Project management knowledge areas

There are 49 project management processes identified in the Project management Body of Knowledge Guide which are grouped into 10 knowledge areas. The Project Coordination Unit of the Ministry of Education Science and Culture does not officially use these project management concepts when planning, executing and closing projects, however parts of these models are integrated in their general way of implementing projects.

This FGP will only focus on the six (6) knowledge areas that are most relevant to the realization of this project's objectives. These knowledge areas are further explained in the following paragraphs.

1. *Project Integration Management*

   Project Integration Management is one of the ten project management knowledge areas and is the element that coordinates all aspects of the project and touches all five phases of a project. "Project Integration Management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups" (Project Management Institute, 2017). The processes involved in Project Integration are presented in chart 1 below. For the development of the Project Management Plan only process 4.1 and 4.2 will be further used. The Project Charter formally authorizes the project start and is a high-level document consisting of the project goals and the deliverables. The project charter also gives the project manager the authority to request and manage the resources of the Project. Furthermore, the development of the project management plan is the masterplan that is a consolidation of all the subsidiary management plans that provides a quick overview of the entire project and baselines for schedule, cost and scope. According to Westland (2018) Project Integration Management is a way of making various processes work together which means that it takes numerous processes that are being used in a project and ensures they are coordinated with each other.

Chart 1 Integration Management (Source: Compiled by author, 2018)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
1. Integration Management	4.1 Develop Project Charter	4.2 Develop Project Management Plan	4.3 Direct & Manage Project Work 4.4 Manage Project Knowledge	4.5 Monitor & Control Project Work 4.6 Perform Integrated Change Control	4.6 Close Project or Phase

2. *Project Scope Management*

Project Scope Management refers to the set of processes that ensure a project's scope is accurately defined and mapped (Monnappa, 2018). The steps involved in project scope management are defining the project needs and understanding the project objectives. "Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully" (Project Management Institute, 2017). According to Moustafaev (2015), Project Scope Management is primarily concerned with defining and controlling what is and is not included in the project. He also mentions that it encompasses the processes needed to ensure that the project includes all the work required, and only the work required to complete the project successfully. The processes involved in Project Scope Management are presented in chart 2 below. In this graduation project only processes, 5.1, 5.2, 5.3 and 5.4 will be subjects of study.

Chart 2 Scope Management (Source: Compiled by author)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
2. Scope Management		5.1 Plan Scope Management 5.2 Collect Requirements 5.3 Define Scope 5.4 Create WBS		5.5 Validate Scope 5.6 Control Scope	

3. Project Schedule Management

In project management, a schedule is a listing of milestones of a project, activities and deliverables, usually with intended start and finish dates, which are often estimated by other information included in the project schedule of resource allocation, budget, task duration and linkages of dependencies (Wikipedia, 2018). The project schedule can be seen as a tool that communicates what work needs to be performed, which resources of the organization will perform the work and the timeframes in which that work needs to be performed. “Project Schedule Management includes the processes required to manage the timely completion of the project” (Project Management Institute, 2017). It occurs during the planning phase of the project. The processes involved in Project Schedule Management are presented in chart 3 below. Only processes 6.1, 6.2, 6.3, 6.4, and 6.5 will be applied in this graduation project.

Chart 3 Schedule Management (Source: Compiled by author)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
3. Schedule Management		6.1 Plan Schedule Management 6.2 Define Activities 6.3 Sequence Activities 6.4 Est. Activity Durations 6.5 Develop Schedule		6.6 Control Schedule	

4. Project Cost Management

Project cost management sets a baseline for the project costs which means that it governs the decisions and directions the project manager will take when managing the costs of the project (Bridges, 2018). It covers the full life cycle of the project from the initial planning phase towards measuring the actual cost performance and completion of the project. Project managers have the task to keep a project on budget and they must implement effective project cost management strategies to ensure that changing requirements do not push up the

costs of the project (Bisk, 2018). Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget" (Project Management Institute, 2017). The processes involved in Project Cost Management are presented in chart 4 below. To develop the project management plan, the processes 7.1, 7.2 and 7.3 will be applied.

Chart 4 Cost Management (Source: Compiled by author)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
4. Cost Management		7.1 Plan Cost Management 7.2 Estimate Costs 7.3 Determine Budget		7.4 Control Costs	

5. *Project Risk Management*

It is impossible to imagine a project without risk and undoubtedly true that projects are risky as a result of their common characteristics, by deliberate design, and because of the external environment within which they are undertaken (Hillson, 2014). Some projects have high risks and other less risk, but all projects are risky to some extent. It is important to keep risks out of projects but also to ensure that the inevitable risk associated with every project is at a level which is acceptable to the sponsor and is effectively managed. "Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project" (Project Management Institute, 2017). The processes involved in Project Risk Management are presented in chart 5 below. In order to develop the Risk Management plan, the processes 11.1, 11.2, 11.3 and 11.5 will be further used.

Chart 5 Risk Management (Source: Compiled by author)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
5. Risk Management		11.1 Plan Risk Management 11.2 Identify Risk 11.3 Perform Qualitative Risk Analysis 11.4 Perform Quantitative Risk Analysis 11.5 Plan Risk Responses	11.6 Implement Risk Responses	11.7 Monitor Risks	

6. *Project Stakeholder Management*

Behavioral insights are not sufficient for a good project stakeholder management, but rather an analytical and structured approach in which methods and tools are applied for analysis (Eskerod P. & Jepsen A. L., 2013). When knowledge about stakeholders is structured, the project team is in a better position to deal with them in ways that are beneficial for both the project and the stakeholders. Project Stakeholder Management includes the processes required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution" (Project Management Institute, 2017). The processes involved in Project Stakeholder Management are presented in chart 6 below. Only process 13.1 and 13.2 will be used to create the Stakeholder Engagement Plan.

Chart 6 Stakeholder Management (Source: Compiled by author)

Knowledge Area	Initiating	Planning	Executing	Monitoring & Controlling	Closing
6. Stakeholder Management	13.1 Identify Stakeholders	13.2 Plan Stakeholder Engagement	13.3 Manage Stakeholder Engagement	13.4 Monitor Stakeholder Engagement	

3 METHODOLOGICAL FRAMEWORK

3.1 Information sources

According to the oxford dictionary (2018) the definition of information can be referred to facts provided or learned about something or someone. Source on the other hand can be referred to a place, person, or thing from which something originates or can be obtained. An information source can be a person, thing or place from which information can be retrieved. “The goal of information sources is to provide information that is valuable and valid so that the decision taken by the user can be optimally beneficial” (Singh, 2013). There are various sources of information for example, libraries, dictionaries, books, manuals, directories, the internet, journals, transcripts etc.

According to Singh (2013) information sources can be divided into two types which are the documentary resources (print and digital) and Non-documentary sources. The documentary resources can be further divided into Primary, Secondary and Tertiary sources. To develop this Final Graduation Project only the primary and secondary resources will be further used.

3.1.1 Primary sources

Primary sources of information provide direct and firsthand evidence about a subject, object, person, thing, work or event. Primary sources of information are more current and up to date than any other sources of information (Singh, 2013). They usually consist of the latest available information. Examples of primary sources are government documents, patents, journals, legislation, periodicals, research reports, standards and unpublished documents.

The primary sources used for this graduation project are:

- Legal documentation obtained from the Ministry of Education Science and Culture.
- Project unit IADB and MOESC
- Signed contractual agreements

- Reports on progress, finance and status of the project SU-L1038
- Project Documents
- Personal interviews with stakeholders
- Meeting minutes

An overview of the objectives and the corresponding primary sources are presented in Chart 7.

3.1.2 Secondary sources

“Secondary sources are the sources which are compiled from the primary sources” (Singh, 2013). They offer an analysis or a restatement of the primary sources that often involve generalization, interpretation, commentary, summary or evaluation to demonstrate an argument of the original source to the reader. Examples of secondary sources are: newspaper articles, political commentary, criticism on literature, indexes, biographies etc.

The secondary sources used for this graduation project are the following:

- A Guide to the project Management Body of Knowledge
- Literature study
- Documentation retrieved from the Ministry

An overview of the secondary resources on the specific objectives are presented in Chart 7.

Chart 7 Information sources (Source: Compiled by Author)

Objectives	Information sources	
	Primary	**Secondary**
1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.	Project Team IADB and PCU. BEIP Project Manager, Contractual Documents obtained from IADB and PMU.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study. Documents retrieved from the website of MOESC and IADB.
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.	Interview Infrastructure Assistant BEIP PCU, Meeting minutes project teams, Project Documents.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study.
3. To construct a schedule management plan to support the development of a project schedule, monitoring and controling the project schedule ensuring the project ends within the scheduled time frame.	Interview Infrastructure Assistant BEIP PCU, Meeting minutes project teams, Project Documents.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study.
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is completed within the approved budget.	Interview Infrastructure Assistant BEIP PCU, Meeting minutes project teams, Project Documents.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study.

5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence.	Interview Infrastructure Assistant BEIP PCU, Meeting minutes project teams, Project Documents.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study.
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.	Interview Infrastructure Assistant BEIP PCU, Meeting minutes project teams, Project Documents.	*PMBOK*® Guide, Library database IADB, Library database PMI, Literature study.

3.2 Research methods

Research is a process and set of actions undertaken with the goal of identifying and understanding something new or fresh about a given area, field, subject or discipline (Stokes and Wall, 2014). According to Oxford dictionaries (2018) a method can be defined as a particular procedure for accomplishing or approaching something. The research method that will be used for this graduation project is the Analytical Research Method.

3.2.1 Analytical method

Research takes place through several different ways of methods and methodological approaches. The analytical method is a generic process combining the scientific method using a formal process to solve any type of problem. “In analytical research the researcher has to use facts or information already available and analyze these to make critical evaluation of the material” (Achari, 2014). This has to do with in-depth study and

evaluation of the information in an attempt the explain complex situations. Analytical research aims to understand a situation by discovering and measuring causal relations among them (Israr, 2016, slide 15).

The research methods for each of the specific objectives are indicated in Chart 8 below.

Chart 8 Research methods (Source: Compiled by Author)

Objectives	Research method
	Analytical Research Method
1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 1, to see how decision making took place when the program was in initiation phase.
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 2, to see how decision making took place, when the program was being designed, related to the scope of the Cenasu project.
3. To construct a schedule management plan to support the development of a project schedule, monitoring and controling the project schedule ensuring the project ends within the scheduled time frame.	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 3, to see what decision took place related to the time schedule of the project.
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 4, to see how

completed within the approved budget.	the costs for the Cenasu project was determined.
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence.	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 5, to see what decision took place related to the identified risk of the project.
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.	The analytical method will be used by gathering facts or information from sources identified in Chart 7, objective 6, to see how stakeholders are being managed.

3.3 Tools

The Project Management Body of Knowledge defines a tool as something tangible, such as a template or software program, used in performing an activity to produce a product or result.

Each tool used in the Final Graduation Project is identified and explained below. In addition, the information is summarized in Chart 9 for each of the specific objective:

a. Activity List template – captures the list of activities for the project.
b. Project charter template – guides the development of the project charter.
c. Project Scope Management plan template – guides the development of the scope management plan and its components.
d. Software – MS Project 2016, MS PowerPoint 2016, MS Excel 2016
e. Project Management Plan template – guides the development and organization of the project management plan and all its subsidiary plans.

f. Schedule management plan template – guides the development of the project schedule and its subcomponents.
g. Cost Baseline template – outlines the cost baseline of the project.
h. Cost Management Plan template – develops the cost management plan that will guide the project team throughout the project's lifecycle.
i. Risk Management Plan and Risk Register template – identifies and classifies risks and plans risk responses.
j. Stakeholder Analysis Chart – support the analysis and classification of stakeholders.
k. Stakeholder Engagement Assessment Matrix – details how each project stakeholders will be engaged based on their level of interest.
l. Stakeholder Engagement Plan template– describes which strategies will be used to involve stakeholders in decision making.
m. Stakeholder Register – supports in the identification of project stakeholders.
n. Work Breakdown Structure (WBS) – breaks down the project into smaller manageable parts so it can be easily managed.

Chart 9 Tools (Source: Compiled by Author)

Objectives	**Tools**
1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.	Project charter template.

2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.	Scope management plan template, Work Breakdown Structure, Microsoft PowerPoint 2016.
3. To construct a schedule management plan to support the development of a project schedule, monitoring and controling of the project schedule ensuring the project ends within the scheduled time frame.	Schedule management plan template, Activity List Template, Microsoft Project 2016.
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is completed within the approved budget.	Cost management plan template, Cost Baseline template, Microsoft Excel 2016.
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence.	Risk management plan template, Risk Register chart.
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.	Stakeholder engagement plan template, Stakeholder engagement assessment matrix. Stakeholder Register template.

3.4 Assumptions and constraints

The Project Management Institute (2017) defines an assumption as a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration. A constraint is defined as a limiting factor that affects the execution of a project, program, portfolio or process (Project Management Institute, 2017). Both assumptions and constraints are recorded in the assumption log throughout the lifecycle of a project. The assumptions and constraints for this Graduation Project are presented in chart 10 below for each specific objective.

Chart 10 Assumptions and constraints (Source: Compiled by Author)

Objectives	Assumptions	Constraints
1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.	The Project Charter will be one of the first documents that will be developed.	Much more time might be needed to finish the project charter.
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.	Documents are available for analysis. Communication with project team is easily accessible.	The allotted time to finish the deliverable is very tight to develop a comprehensive framework.
3. To construct a schedule management plan to support the development of a project schedule, monitoring and controling of the project schedule ensuring the project ends within the scheduled time frame.	Documents are available for analysis. Communication with project team is easily accessible.	The allotted time to finish the deliverable is very tight to develop a comprehensive framework.
4. To create a cost management plan to	Documents are available	The allotted time to

Objectives	Assumptions	Constraints
plan, structure and control the project budget ensuring the project is completed within the approved budget.	for analysis. Communication with project team is easily accessible.	finish the deliverable is very tight to develop a comprehensive framework.
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to minimize re-occurrence.	Documents are available for analysis. Communication with project team is easily accessible.	The allotted time to finish the deliverable is very tight to develop a comprehensive framework.
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.	Documents are available for analysis. Communication with project team is easily accessible.	The allotted time to finish the deliverable is very tight to develop a comprehensive framework.

3.5 Deliverables

A deliverable is a unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase or project (Project Management Institute, 2017). The deliverables for each of the specific objectives are presented in the chart below.

Chart 11 Deliverables (Source: Compiled by Author)

Objectives	Deliverables
1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.	Project Charter
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.	Scope Management Plan.
3. To construct a schedule management plan to support the development of a project schedule, monitoring and controling of the project schedule ensuring the project ends within the scheduled time frame.	Schedule Management Plan
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is completed within the approved budget.	Cost Management Plan
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate way to	Risk Management Plan

minimize re-occurrence.	
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.	Stakeholder Engagement Plan

4 RESULTS

4.1 Project Integration Management

One of the first processes in the Project Integration Management knowledge area is the development of the Project Charter. According to the PMBOK Guide this process, which is also the first specific objective in the development of the project management plan for building a training center for teachers in Suriname, consist of developing a document that formally authorizes the existence of a project and provides the project manager with the authority to apply organizational resources to project activities (Project Management Institute, 2017). A template from the website projectmanagementdocs.com was used as a tool to develop this charter and also as a guide to the application of the research methodology. This was accomplished by conducting several interviews research of project documents.

The second process in this knowledge area was the development of the Project Management Plan, which consisted of several subsidiary management plans developed for this Final Graduation Project.

As mentioned before, the project charter is the document that formally authorizes the existence of a project and included the following topics: Project purpose, project objectives, high-level requirements and project description, project risk, milestones schedule, preapproved financial resources, stakeholder list, project approval requirements, project exit criteria, assigned project manager, and name of the sponsor (Project Management Institute, 2017).

In order to develop the Project Charter, the following inputs and tool and techniques were used. See figure 7 below (Project Management Institute, 2017).

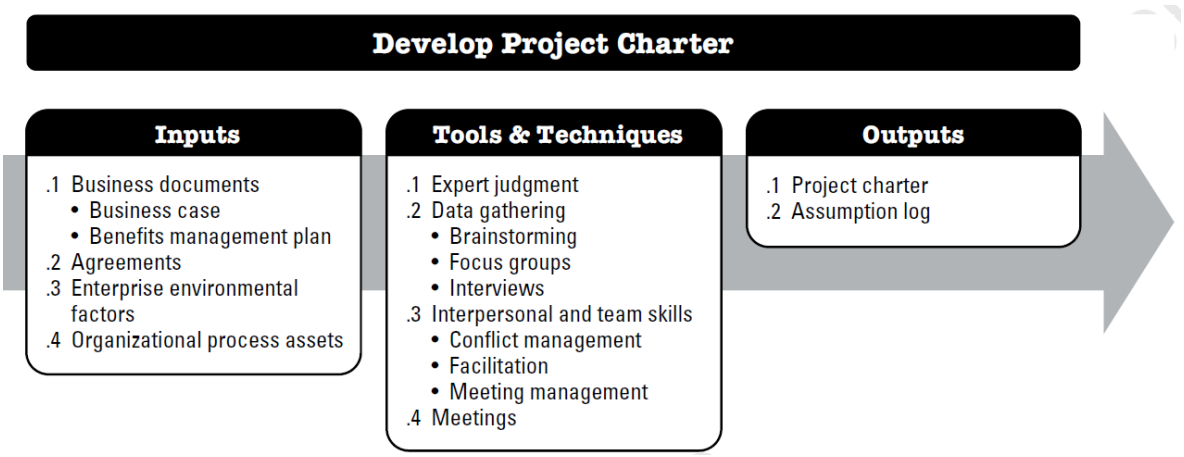


Figure 7 Develop Project Charter Reprinted from *A Guide to the Project management Body of Knowledge* (p. 75), Project Management Institute, 2017. Copyright 2017 by Project Management Institute, Inc.

Several business documents and agreements were obtained from the IADB project website that were used as a source of information to develop the Project Charter. Little to no information was available on the Enterprise Environmental Factors and Organizational process Assets due to the fact that the Project Executing Unit did not have an appropriate project management approach and they did not have a project management system in place for records and documentation. In addition to the information obtained from business documents, an interview was conducted with the Infrastructure Consultant within the Project Management Unit to develop the Project Charter in the following section.

Project Charter for construction of Teacher Training Center

Project Purpose/Justification

Business Need/Case

With support from the Inter-American Development Bank the Ministry of Education Science and Culture in Suriname has engaged in a 5-year program: Basic Education Improvement Program. The building of a center for teacher training arises from this program, in which curriculum is being developed, but there are no adequate facilities to train teachers and principals in the new methodology.

Business Objectives

The following business objectives have been established for this project:

a. To build a two-story multifaceted training center that can accommodate multiple events that contributes to continuation of teacher education and training.
b. To build a modern teacher training center that is innovative and functions as forum for all teacher needs in Suriname.
c. To create a structure that is economical feasible to build and to be maintained by the Ministry.

Project Description

Stakeholders:

Ministry of Education, Science and Culture:

- Project Coordination Unit
- Project Manager
- Project Team
- Building Commission
- Teachers
- Cenasu office
- Ministry of Public Works

Inter-American Development Bank (Project Sponsor)

NV SINTEC (Engineering Firm):

- Architect
- Director
- Project Manager
- Assistant Project Manager
- Designers
- Environmental Consultant

Construction Contractor:

- Electrical
- Water and Sanitation

- Fire/Safety/ Protection
- Data and telecom workers
- Construction Workers

High-level requirements

1. Use of materials that follows green sustainable project management as set forth by GPM.
2. Implement green technologies for water and energy consumption.
3. The structure, especially the roof must withstand high wind circumstances
4. Training rooms must be dividable in smaller rooms for smaller training sessions
5. The training rooms must have a podium for presentations.
6. The new building should meet safety and evacuation codes to ensure that evacuation routes and exits are designed to meet national and international requirements.

Constraints

The project budget should not exceed USD 1,200,000.00. The project time schedule for construction should not exceed nine (9) months, with additional 6 months for the defect liability period.

Assumptions

1. Schedule:
   It is assumed that the project will be completed within (nine) 9 months.
2. Budget:
   It is assumed that the project will be accomplished for the amount of USD 1,200,000.00.
3. Finance
   It is assumed that the client is funded as needed to facilitate timely payments to contractors.
4. Labor:

It is assumed that all contractors participating in the tender for the construction have skilled workers.

Risks

1. Change in Minister can cause delays with project execution, approval of milestones, scope change, due to the fact that he/she needs to be informed of the project and objectives.
2. Weather:
   It is assumed that the project will go through the rainy seasons and could cause delays.
3. Price fluctuations in the market can have influence on the total project budget, such as increase in prices of materials and equipment.
4. Devaluation can have an overall impact on the project execution status.
5. Delays in schedule due to late delivery of materials or weather conditions.
6. Extreme rainfall can obstruct the flow of water through the main sewer
7. Stakeholder engagement and involvement

Summary of Milestone Schedule

Chart 12 Milestone Schedule (Source: Compiled by Author)

	Milestone	Date
1	Tender Announcement	October 12, 2018
2	Tender Evaluation	December 14, 2018
3	Contract Signature	January 7, 2019
4	Mobilization Construction site complete	January 21, 2019
5	Project Kick-Off	January 22, 2019
6	Foundation Works Begin	January 23, 2019
7	Ground Floor Works Begin	February 1st, 2019
8	Ground Floor Steel Frame Erection Complete	February 15, 2019
9	Second Floor Steel Frame Erection Complete	February 22, 2019
10	Roof Top Steel Frame Erection Complete	March 1st, 2019

11	Concrete Flooring, Walls and Stairs	March 15, 2019
12	Roof Top Installed	March 25, 2019
13	Electrical Installations complete	April 12, 2019
14	Water Installations Complete	April 23, 2019
15	Data and Telephone Cable Networking finished	May 7, 2019
16	Windows and Doors Installed	May 16, 2019
17	Floor Tiling Complete	May 30, 2019
18	Ceilings Finished	June 13, 2019
19	Painting Complete	June 27, 2019
20	Drainage System Complete	July 18, 2019
21	Air Conditioning Systems Installed	July 31, 2019
22	Furnishing of Building Complete	August 15, 2019
23	Miscellaneous Works Complete	August 23, 2019
24	Final Building Inspection	August 30, 2019
25	Final Completion Report	September 15, 2019
26	End of Project	September 17, 2019

Project Budget

The total budget allocated for this project is US$ 1,200,000.00 which includes all costs related to the construction of the building, insurance and contingency reserves.

Project Sponsor

The sponsor of this project, building of a training center for teachers, is the Inter-American Development Bank.

Project Manager

The project Manager is Mrs. Sitih Amat. The assistant Project Manager, who is Mr. Raijant Gangadin, will be in charge in absence of the Project Manager.

4.2 Project Scope Management

Project Scope Management is the set of processes that ensures the project scope is accurately defined and mapped. It was the first set of processes in the planning process group to be developed followed by the project charter in the initiation process group.

To define the scope of this project, a scope management plan was developed using a template from www.projectmanagementdocs.com. The Scope Management Plan included the following aspects: scope definition, project scope statement, the Work Breakdown Structure (WBS), WBS dictionary, scope verification and scope control which could be used by the project team as a guide during the lifecycle of the project.

As indicated in the PMBOK Guide 6th edition, the project charter was used as an input for analysis and meetings were held with the Project Executing Unit to review key project documents, historical information and documentation on the design of the building.

Scope Management Plan

Introduction

The Scope Management Plan is crucial for controlling the scope of the project. This plan records the scope management approach, roles and responsibilities as they refer to project scope, scope definition, verification and control measures, scope change control and the project's Work Breakdown Structure (WBS). Any project communication which pertains to the project's scope should adhere to the Scope Management Plan.

Scope Management Approach

Scope management of this project will be the responsibility of the Project Team. The scope is defined by the Scope Statement, Work Breakdown Structure (WBS) and WBS Dictionary. The project manager, the sponsor and stakeholders will establish and approve documentation for measuring the project scope which includes deliverable

quality, checklists and work performance measurements. Proposed scope changes may be initiated by the project manager, stakeholders or any member of the project team. All change requests will be submitted to the project manager who then will evaluate the requested scope change. Upon acceptance of the scope change request, the Project Manager will submit the scope change request to the Change Control Board and Project Sponsor for acceptance. Upon approval of scope changes by the Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all stakeholders. Based on feedback and input from the Project Manager and Stakeholders, the Project Sponsor is responsible for the acceptance of the final project deliverables and project scope.

Roles and Responsibilities

The Project Manager, Sponsor and team will all play key roles in managing the scope of this project. As such, the project sponsor, manager, and team members must be aware of their responsibilities in order to ensure that work performed on the project is within the established scope throughout the entire duration of the project. The table below defines the roles and responsibilities for the scope management of this project.

Chart 13 Management Roles and Responsibilities (Source: Compiled by Author)

Name	Role	Responsibilities
Ministry of Education, Science and Culture	Executor	- Provides high-level direction and input - Provides subject matter inputs - Helps support the resources needs
Inter-American Development Bank	Project Sponsor	- Approve or deny scope change requests as appropriate - Evaluate need for scope change requests - Accept project deliverables
Sitih Amat	Project Manager	- Measure and verify project scope - Facilitate scope change requests - Facilitate impact assessments of scope change requests - Organize and facilitate scheduled change control meetings

		- Communicate outcomes of scope change requests - Update project documents upon approval of all scope changes
Assistant Project Manager and Project Team	Team Members	- Participate in defining change resolutions - Evaluate the need for scope changes and communicate them to the project manager as necessary
Stakeholders	Subcontractors/ Sub Consultants/ Construction Workers	- Can propose scope changes - Will execute change directives issued by Project Manager

Scope Definition

The scope of a project is defined through a comprehensive requirements collection process where a thorough analysis is conducted on the existing facilities to accommodate teacher training activities in the education system. This project was part of the previous Basic Education Improvement Program but was postponed by the Ministry to be financed in the phase 2 program which is now in education. The requirements were collected from stakeholders within the Ministry and drawings were prepared by the building commission. In this second phase of the BEIP, these preparatory documents were revised by the Project Manager in order to restart the process. The building specifications were finally validated by the Ministry and the process started to hire an Engineering Firm for the architectural design and supervision of this activity.

The project deliverables were generated based on the requirements collection process and also input from subject matter experts such as the Architect, (SINTEC NV), Environmental Agencies, Consultants and Governmental Regulatory Agencies. From the Inter-American Development Bank, an engineering consultant was hired to provide expert opinions on the documents submitted to the Bank for review and no objection. This process of expert judgement also provided feedback to the Project Executing Unit

and the Bank on the safest and cost-efficient ways to meet original requirements of building a two-story training center for teachers in Suriname.

Project Scope Statement

The project scope statement provides a detailed description of the project, deliverables, constraints, exclusions, assumptions, and acceptance criteria. Additionally, the scope statement includes what work should not be performed in order to eliminate any implied but unnecessary work which falls outside the of the project's scope.

Scope Description, Acceptance Criteria and Deliverables

This project includes the building of a two-story multi-faceted teacher training center with concrete flooring, completely raised in 4" masonry and gypsum board with a steel structure (columns and beams).

Floors and Story details

a. Ground floor: shall consist of reception area, multimedia room, training room, lunchroom, kitchen, trainers' room, storage room, and a utility room. The ground floor dimensions are 20m x 18.75m with a concrete floor of 130mm. See figure 1 for architectural layout of the ground floor.

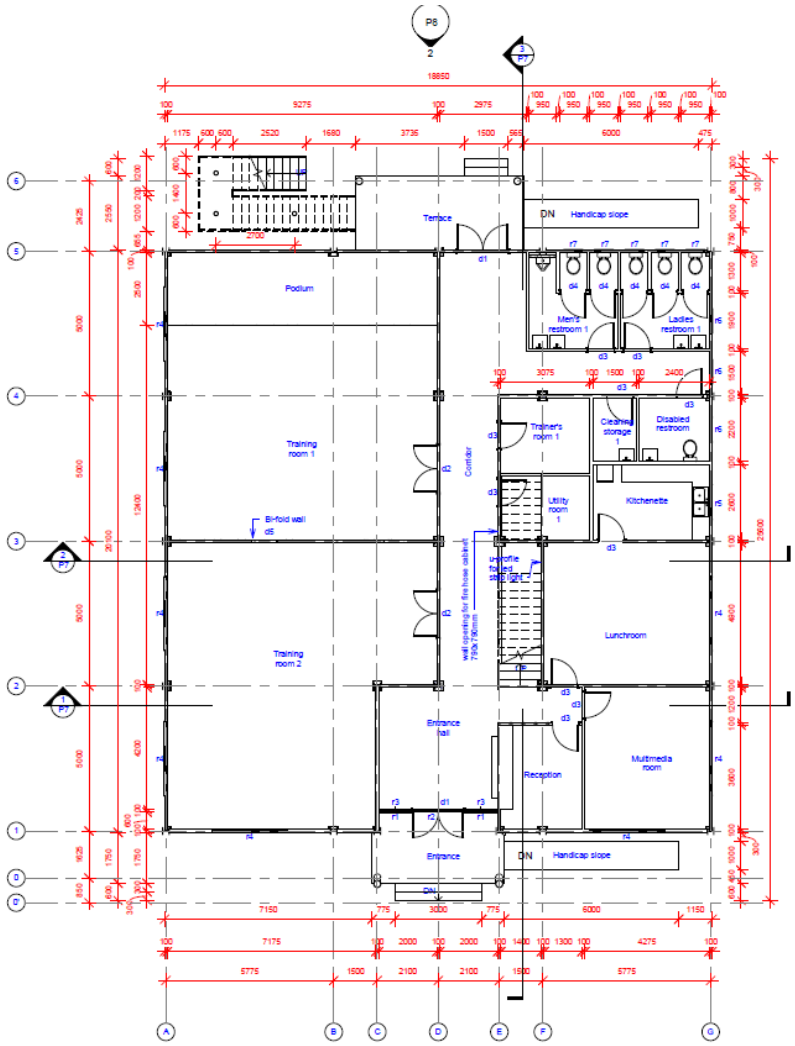


Figure 8 Architectural Layout Ground Floor (SINTEC NV, 2018).

a. First floor shall consist of an administration area, director's office, conference room, secretariat, human resources office, training room, storage and utility room. The first-floor dimensions are 20m x 18.75m with an extension of 2.425M for the balcony in the back. See figure 9 for architectural layout.

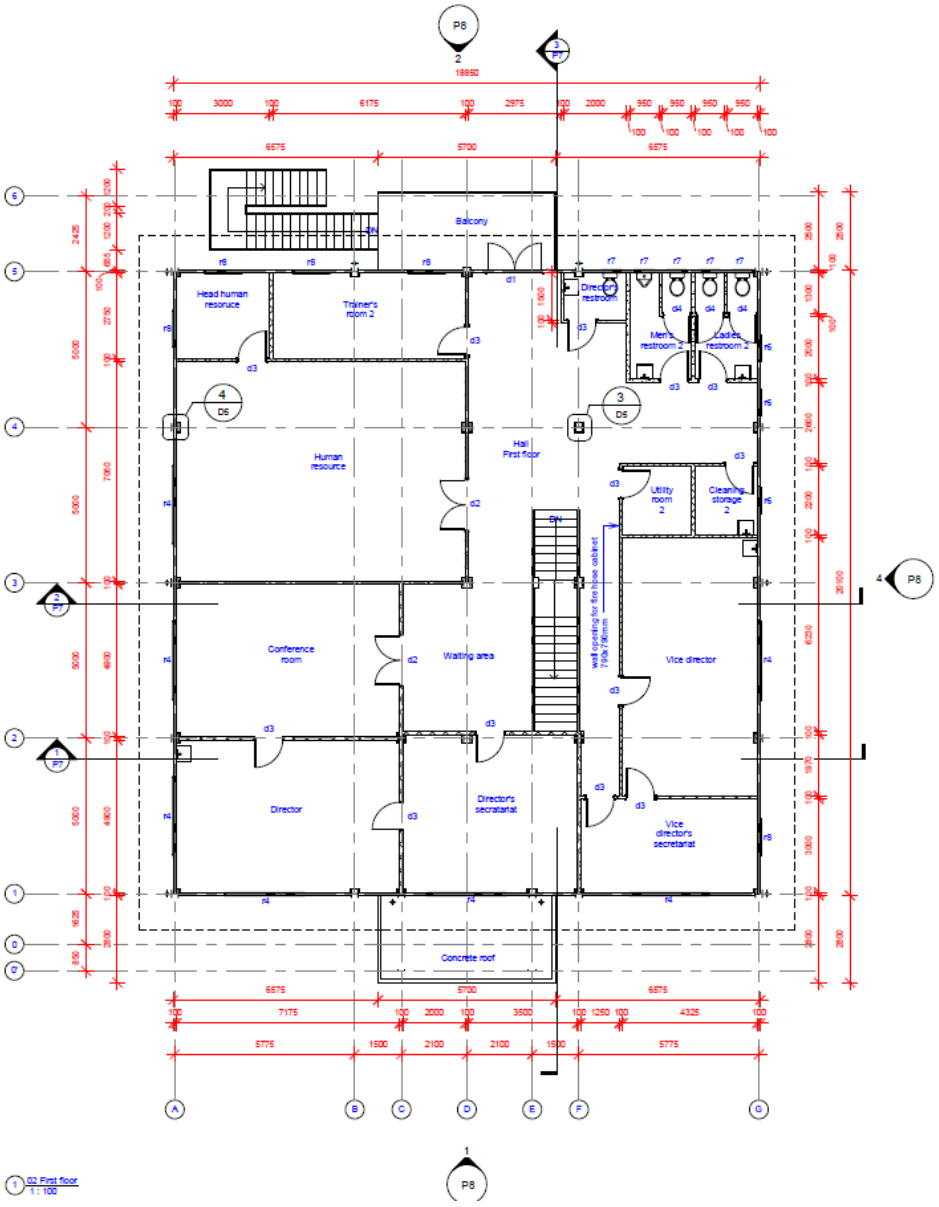


Figure 9 Architectural Layout First Floor (SINTEC NV, 2018).

Building Specifications

a. Building shall be 18.75mx20.00m with an extension on the ground floor of 2.475m for the entrance and on the first floor an extension of 2.425m for the terrace.
b. The building shall have the following floors: Ground floor and first floor.
c. The total building height (incl. The roof) will be around 11.160m.

d. Main corridors have a width of 2.00M, doors to rooms have a minimum width of 850mm, and the overall ceiling height is 2.8m and 3.080m in the entrance hall.
e. The building has 3 options to exit and enter: the main entrance on the ground floor at the front and in the back of the building there is another entryway intended for personnel. The first floor is accessible via the stairs on the ground floor also in the back.
f. The drainage system of the building consists of 4” pvc pipes connected through drain wells to the terrain drain system of 6”, 10” and 12” pvc pipes.
g. The building has a steel bearing construction of columns and beams.
h. The floors are from concrete and the first floor has a steel plate framing.
i. The roof is a steel framed construction with Z purlins and finished off with colored trapezium sheets.
j. All exterior, sanitary and ground floor walls are brick walls. Interior first floor walls are light weight gypsum-steel and cement board steel stud walls.
k. The finishing of the floors and the walls of the sanitary units and kitchen are ceramic tiles.
l. Windows are sliding and from glass and aluminum.
m. Doors are from aluminum and glass elements as well.
n. Electrical points are placed in all areas and the type of light that will be used is a combination of build in TL and LED panels.
o. Water points are in the sanitary units, kitchen, cleaning storages and several office areas.
p. All rooms are cooled by a split unit air condition unit and have windows for natural ventilation.
q. Data entry is placed at all workstations, the training areas and the conference rooms.
r. Telephone lines will be installed in all offices, conference room and the multimedia room.

Further details on the building specifications can be found in the architectural drawings of the ground and first floor and the 3D model of the building.

Figure 10 3D Layout of the New Teacher Training Center (SINTEC NV, 2018).

Project Exclusions

1. Landscaping
2. Roads and Parking
3. Furnishing
4. Guard House
5. Terrain lightening

Project Constraints

The project budget should not exceed USD 1,200,000.00. The project time schedule for construction should not exceed nine (9) months.

Project Assumptions

1. Schedule:
   It is assumed that the project will be completed within (nine) 9 months.
2. Budget:
   It is assumed that the project will be accomplished for the amount of USD 1,200,000.00.
3. Weather:
   It is assumed that the project will go through the rainy seasons and could cause delays.
4. Finance
   It is assumed that the client is funded as needed to facilitate timely payments to contractors.
5. Labor:
   It is assumed that all contractors participating in the tender for the construction have skilled workers.

Work Breakdown Structure

In order to effectively manage the work required to complete this project, it will be subdivided into individual work packages which will not exceed 40 hours of work. This will allow the Project Manager to more effectively manage the project's scope as the project team works on the tasks necessary to complete the project. The project is broken down into five phases: the initiation phase, pre-construction phase, construction phase, post construction phase and the project management phase. Each of these phases is then subdivided in work packages (see WBS below).

Figure 11 Work Breakdown Structure (Compiled by Author, 2018).

In order to clearly define the work necessary for project completion, the WBS Dictionary is used. The WBS Dictionary includes a detailed description of work for each element

and the budget and resource needs for that element. The project team will use the WBS Dictionary as a statement of work for each WBS element.

Chart 14 WBS Dictionary (Source: Compiled by Author)

Level	WBS Code	Element Name	Description of Work	Budget ($)	Resources
1	**1**	**Initiation Phase**	**Project Commencement**	**50,100.00**	
2	1.1	Collect Client Requirements	Conduct meetings to determine client and regulatory needs for the project	1,900.00	Computer, Internet, Relevant literature, Print outs.
2	1.2	Contract Engineering Firm	Contract an engineering firm for architectural design and supervision of works	40,000.00	Computer, Internet.
2	1.2	Client Briefing and Architectural Research	Briefing with the Ministry and the architect on the project and the design of the building	2,000.00	Computer, Internet, Books, Print outs.
2	1.3	Preliminary Drawings and Design	Present to the client the preliminary drawings and design of the building	1,500.00	Computer, Internet, AutoCAD software
2	1.4	Determine Budget and Cost analysis	Cost calculation based on the requirements of the Ministry to complete the project	1,200.00	Computer, Printer
2	1.5	Environmental Assessment	Conduct an environmental assessment of the project site by an environmental specialist	3,000.00	Architectural drawings, project documents.
2	1.6	Construction Tender launch	Publication of bidding documents for the building construction	500.00	Bidding documents, Internet, Newspaper
1	**2**	**Pre-Construction Phase**		**25,500.00**	
2	2.1	Construction contractor selected	Contract signature with building contractor for construction work	3,000.00	Computer, Internet, Contract
2	2.2	Construction drawings	Validate technical documents on the design and drawings with contractor and subcontractors.	1,500.00	Architectural drawings, AutoCAD, Computer, printer.

2	2.3	Permits and approvals	Obtain necessary permits from ministry of public works	1,000.00	Authorized documents, Printer, Computer.
2	2.4	Mobilization ground work	Preparation to start with construction work	15,000.00	Excavators, dump truck, Crane.
2	2.5	Setup facilities onsite	Installations of temporary cabins for contractors to have meetings and monitor work	5,000.00	Truck, crane, excavator.
1	**3**	**Construction Phase**		**731699.13**	
2	3.1	Preparing of terrain and drainage	Cleaning of terrain and of excavate soil to start with foundation and drainage gutters	17,525.69	Suppliers and (sub) contractors quote
2	3.2	Foundation	All the necessary work for completing the concrete foundation with cement	12,928.65	Suppliers and (sub) contractors quote
2	3.3	Steel Construction	Erection of steel beams	35,992.12	Suppliers and (sub) contractors quote
2	3.4	Walls and floors	Installing walls consisting of 4” bricks, cement board, and finishing layer of floors	121,099.38	Suppliers and (sub) contractors quote
2	3.5	Ceiling and Roof	All the necessary work for to complete ceiling on ground and first floor with gypsum and construction of galvanic roof	47,217.33	Suppliers and (sub) contractors quote
2	3.6	Doors, Windows, stairs and podium	All the necessary work for installing aluminum doors, sliding windows, stairs and podium.	49,752.68	Suppliers and (sub) contractors quote
	3.7	Fixed inventory	Installations of sanitary equipment and pumphouse	17,635.90	Suppliers and (sub) contractors quote
2	3.8	Paint	Painting of the building inside and outside	22,025.00	Suppliers and (sub) contractors quote
2	3.9	Electrical, Water and Security	All the necessary work to complete installation of electricity, water and security systems.	297,425.78	Suppliers and (sub) contractors quote
2	3.10	Data and Telephone	All the necessary work to complete cable	12,896.69	Suppliers and (sub)

			installation for data and phone systems		contractors quote
2	3.11	Air Conditioning	All the necessary work for completing installation of air conditioning on ground and first floor.	97,199.91	Suppliers and (sub) contractors quote
1	**4**	**Post-Construction Phase**		**21,000.00**	
2	4.1	Punch list	To fix defective works	15,000.00	Project Manager, Architect
2	4.1	Site clean-up	Clearing the construction site from materials	3,000.00	Truck, excavator,
2	4.2	Final building inspection	Final inspection prior to completion of works by Architect, building commission and project manager	1,000.00	Final report
2	4.3	Final account	Final payments to contractors and subcontractor for services delivered	2,000.00	
1	**5**	**Project Management**		**54,000.00**	
2	5.1	Planning	Planning of project activities throughout the lifecycle of the project	15,000.00	Computer, Printer, MS Project
2	5.2	Scheduling	Planning of the project timeline to determine the project duration	16,000.00	Computer, Printer, MS Project
2	5.3	Financial Management	Monitoring of the financial expenditures throughout the project lifecycle	12,000.00	Computer, Printer, QuickBooks
2	5.4	Meetings	Periodic meetings with stakeholders	6,000.00	Computer, Printer,
2	5.5	Reports	Periodic progress reports of the project	5,000.00	Computer, Printer,
2	5.6	Site visits	Visual inspection of the ongoing construction work.	2,000.00	Computer, Printer, Safety gear

The process of breaking the work into smaller manageable parts continues until the deliverables are small enough to be considered work packages. Each of the packages should be small enough to help the Project Manager estimate the duration and cost.

The form in Chart 15 below shall be used for assigning work packages to resources and will be used by the project team as a statement of work for each WBS element as seen in Chart 14.

Chart 15 Work Package Form (Adapted from www.planningengineer.net)

Project Title:										**Date Prepared:**
Work Package Name: (*From the WBS)*										WBS ID: (*From the WBS)*
Description of Work: *Description of the work to be delivered in sufficient detail to ensure a common understanding by stakeholders.*										
Milestones: 1. *List any milestones associated with the work package.* 2. 3. 4.										Due Dates: *List the due dates of the milestones.*
ID	**Activity**	**Resource**	**Labor**			**Material**			**Total Cost**	
			Hours	**Rate**	**Total**	**Units**	**Cost**	**Total**		
	From Activity list or schedule	*From Resource requirements*	*Total effort.*	*Labor rate.*	*Hours X rate.*	*Amount*	*Cost*	*Units X cost.*	*Labor + Material.*	
1										
2										
3										
Quality Requirements:										
Acceptance Criteria:										
Technical Information:										
Assumptions:										
Constraints:										
Contract Information:										
Reporting Arrangements:										
Work Package Acceptance:										
Work Package Authorization:										

Scope Verification

As this project progresses, the Project Manager will verify interim project deliverables against the original scope as defined in the scope statement, WBS and WBS Dictionary. Deliverables will be verified for formal acceptance through a series of periodic, individually scheduled meetings between the Project Manager and Stakeholders. During this interaction, decision making technique such as unanimity will be used at every inspection of project deliverable. Once the Project Manager verifies that the scope meets the requirements defined in the project plan and acceptance criteria, the Project Manager and Sponsor will meet for formal acceptance of the deliverables. During this meeting, the Project Manager will present the deliverable to the Project Sponsor for formal acceptance. The Project Sponsor will accept the deliverable by signing a project deliverable acceptance document (Project Acceptance Form, see appendix 10) which will give a formal project acceptance. This will ensure that project work remains within the scope of the project on a consistent basis throughout the life of the project.

Scope Control

The Project Manager and the project team will work together to control the scope of the project. The project team will ensure that they perform only the work described in the WBS dictionary and generate the defined deliverables for each WBS element. The Project Manager will oversee the project team and the progression of the project to ensure that this scope control process is followed. If a change to the project scope is needed the process for recommending changes to the scope of the project must be carried out as described in figure 12 below.

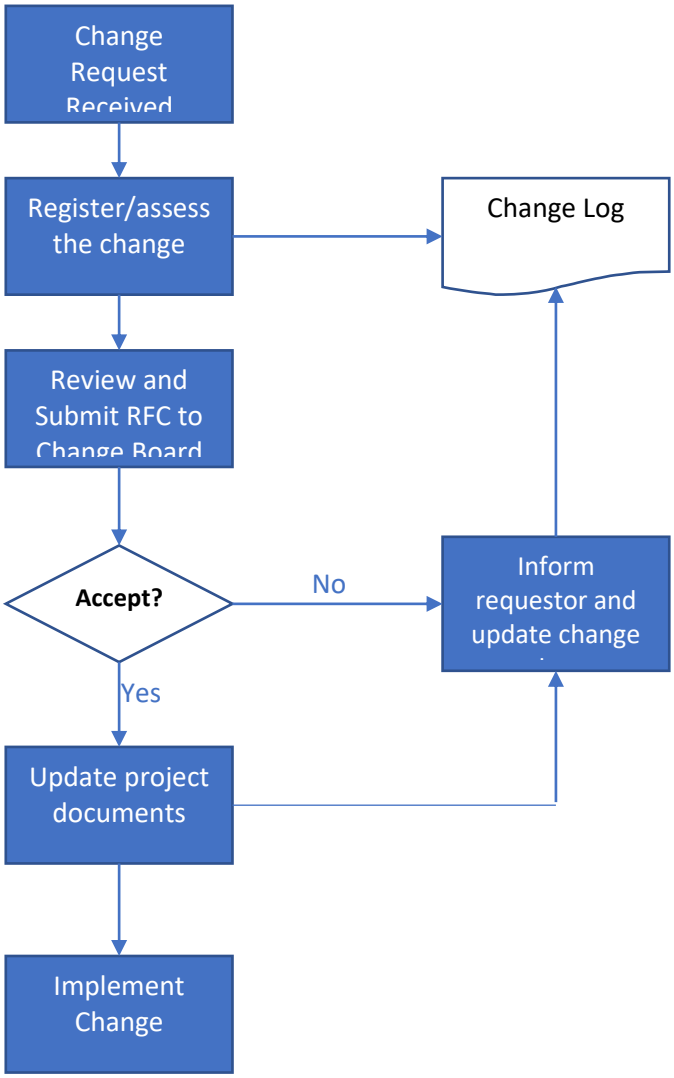


Figure 12 Change request workflow (Compiled by Author, 2018).

Any project team member or sponsor can suggest changes to the project scope. All change requests have to be proposed to the Project Manager in the form of a project change request document. The Project Manager will then review the suggested change to the scope of the project. The Project Manager will then asses the change request and submit to the Change Control Board and sponsor for approval. If the Change Control Board and Sponsor approves the scope change the Project Sponsor will then formally

accept the change by signing the project change control document. Upon acceptance of the scope change by the Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all project team members stakeholders.

Chart 16 Change Request Form (Adapted from www.projectmanagementdocs.com)

Change Request Form			
Project Name:			Date:
Change Requestor:			Change No:
Change Category *(Check all that apply):* □ Schedule □ Cost □ Scope □ Requirements/Deliverable □ Testing/Quality □ Resources			
Does this Change Affect *(Check all that apply)* □ Corrective Action □ Preventative Action □ Defect Repair □ Updates □ Other			
Describe the Change Being Requested:			
Describe the Reason for the Change:			
Describe all Alternatives Considered:			
Describe any Technical Changes Required to Implement this Change:			
Describe Risks to be Considered for this Change:			
Estimate Resources and Costs Needed to Implement this Change:			
Describe the Implications to Quality:			
Decision: □ *Approve* □ *Reject* □ *Defer*			
Justification of Approval, Rejection, or Deferral:			
Change Board Approval:			
Name	Signature	Date	

4.3 Project Schedule Management

4.3.1 Schedule Management Plan

Introduction

The project schedule management processes were conducted after the integration and scope management. The first process is plan schedule management in which the output is the development of the Schedule Management Plan. An important benefit of this plan is that it provides guidance and direction on how the project will be managed throughout the Lifecyle of the project (Project Management Institute, 2017). Furthermore, the project charter and the scope management plan were used as an input for developing the project schedule. The tools and techniques used during this process were expert judgement, meetings were held with the project team, and data analysis to create the Schedule Management plan. A Schedule Management Plan template from an online source was used and adapted for this process (see appendix 6).

Schedule Management Plan Building of a Teacher Training Center

Schedule Management Approach

The project schedule will be made using the Microsoft Project 2016 software using the work breakdown structure and the WBS dictionary in which the following activities were crucial for gathering data to build the schedule:

- Activity Definition: identification of the work packages which must be performed to complete each deliverable.
- Activity Sequencing: determine the order of the work packages and assign relationships between project activities.
- Activity Duration: calculate the number of work periods required to complete work packages.
- Resource Estimating: assign resources to work packages in order to complete schedule development process.

Once the initial schedule has been developed it will be assessed by the Project Manager and the project team to reach an agreement on the proposed work packages assignment, the durations and the schedule. When this is completed it will be sent to the Project Sponsor for review and approval after which the approved scheduled will be considered the schedule baseline.

The following table provides an overview of the milestones for the Teacher Training Center project:

Chart 17 Project Milestones (Source: compiled by the author)

	Milestone	Date
1	Tender Announcement	October 12, 2018
2	Tender Evaluation	December 14, 2018
3	Contract Signature	January 7, 2019
4	Mobilization Construction site complete	February 7, 2019
5	Project Kick-Off	February 8, 2019
6	Foundation Works Begin	March 1st, 2019
7	Ground Floor Works Begin	March 29, 2019
8	Ground Floor Steel Frame Erection Complete	April 10, 2019
9	Second Floor Steel Frame Erection Complete	April 17, 2019
10	Roof Top Steel Frame Erection Complete	April 25, 2019
11	Concrete Flooring, Walls and Stairs	May 30, 2019
12	Roof Top Installed	June 21, 2019
18	Ceilings Finished	June 20, 2019
16	Windows and Doors Installed	July 11, 2019
22	Fixed inventory installed	July 25, 2019
19	Painting Complete	August 15, 2019
20	Drainage System Complete	August 22, 2019
15	Data and Telephone Cable Networking finished	August 29, 2019
13	Electrical Installations complete	September 12, 2019
14	Water Installations Complete	September 12, 2019
17	Floor Tiling Complete	September 27, 2019
21	Air Conditioning Systems Installed	October 3, 2019
23	Miscellaneous Works Complete	October 31, 2019

24	Final Building Inspection	November 21, 2019
25	Final Completion Report	November 28, 2019
26	End of Project	November 28, 2019

Roles and responsibilities for the schedule development are as follow:

Chart 18 Schedule roles & Responsibilities (Source: compiled by the author)

Role	Responsibility
Project Manager	- Facilitating breakdown of work packages into activities to make it easier for sequencing - Create the project schedule in Microsoft Project - Validate schedule with project team members - Obtain approval from stakeholders
Project Team	- Participate in work, duration and resource estimating - Validate the proposed schedule and assign activities
Project Stakeholders	- Participate in schedule review meetings and assist with approval of final schedule

Schedule Control

The project schedule will be reviewed and updated as necessary when new information becomes available. It will include the actual start and finish dates and an overview of percentages completed. The project team is responsible for participating in progress meetings to review the schedule and communicate any changes on the actual start and finish dates to the project manager. The project manager is responsible for schedule updates, determining any required modification and submitting change requests as per change process workflow in chart 13 to the change control board or the Project Sponsor for review and approval.

Schedule Changes and Thresholds

If the project team determines that a modification is required to the schedule, the project manager and team will assess and evaluate the change and the following procedures will be considered:

- The project team determines which tasks will be impacted
- The project team will check for any variance resulting from the potential change
- The project team will check for any alternatives and variance resolution activities they may employ and see how it would affect the scope, schedule and resources.
- If, after evaluation is complete, the project manager determines that any change will exceed the established schedule constraints, then a schedule change request will be submitted.
- Submit a schedule change request to the project sponsor for approval if either of the two following conditions are true:
    - The proposed change is estimated to reduce the duration of an individual work package by 7% or more, or increase the duration of an individual work package by 7% or more.
    - The change is estimated to reduce the duration of the overall baseline schedule by 7% or more, or increase the duration of the overall baseline schedule by 7% or more.
- Any change requests that would result in changes that are within or less than the percentages indicated above must be submitted to the project manager for approval.
- After approval of the change request, it is the responsibility of the project manager to adjust the schedule and project scope baseline and communicate all changes and impacts to the project team, the project sponsor and stakeholders.

Scope Change

Any project stakeholder can request project scope changes throughout the lifecycle of the project. Such request must by initially reflected in a Change Request Form (see Chart 16) and submitted to the Project Manager who will assess the change request and submit to the Sponsor for approval. All scheduled changes must comply with the

change process flow as depicted in figure 12. Any changes to the project scope, which have been approved by the project sponsor, will require an evaluation of the outcome of the scope changes on the current schedule. If the project manager determines that the scope change will significantly affect the current project schedule, they may demand that the schedule is re-baselined in concern of any changes, which needs to be made as part of the new project scope. The project sponsor must review and approve this request before the schedule can be re-baselined.

4.3.2 Define Activities

The second process in project schedule management is Define Activities. According to the PMBOK® Guide Define Activities can be described as the process of identifying and documenting the specific actions to be performed to produce the project deliverables. For activity definition the following inputs were used: the schedule management plan and the scope baseline which documented the project WBS, deliverables, constraints and assumptions. The techniques used in this process were decomposition and expert judgement. To develop the schedule, Microsoft Project 2016 was used as a scheduling tool to capture the information for this process and the other processes. The output for this process is the Activity List which can be seen in chart 23 and was developed based on information from the project schedule. According to PMI the Activity List consist of an activity identifier and a scope of work description for each activity in sufficient detail, to ensure that the project team members understand what work is required to be completed (Project Management Institute, 2017). An activity attributes list was not developed as an output in this process because the information related to activity ID, activity description, WBS ID, logical relationships, predecessor and successor activities were already captured in other plans included in this FGP. After defining the activities, the milestone list that can be found in the project charter and schedule management plan were subsequently updated.

Chart 19 Activity List (Source: compiled by the author)

ID Nr.	Activity Name	Description of Work	Responsibility
1	Initiation Phase	Project Commencement	IADB, Project, Manager, MOESC
1.1	Collect Client Requirements	Conduct meetings to determine client and regulatory needs for the project	Project Manager, Building Commission, MOESC
1.2	Contract Engineering Firm	Contract an engineering firm for architectural design and supervision of works	Project Manager, Building Commission, MOESC
1.2	Client Briefing and Architectural Research	Briefing with the Ministry and the architect on the project and the design of the building	Project Manager, Building Commission, SINTEC
1.3	Preliminary Drawings and Design	Present to the client the preliminary drawings and design of the building	SINTEC
1.4	Determine Budget and Cost analysis	Cost calculation based on the requirements of the Ministry to complete the project	Project Manager, MOESC
1.5	Environmental Assessment	Conduct an environmental assessment of the project site by an environmental specialist	SINTEC
1.6	Construction Tender launch	Publication of bidding documents for the building construction	Project Manager, MOESC
2	Pre-Construction Phase	Design and contracting phase	Project Manager, SINTEC
2.1	Construction contractor selected	Contract signature with building contractor for construction work	Project Manager, MOESC
2.2	Construction drawings	Validate technical documents on the design and drawings with contractor and subcontractors.	Project Manager, SINTEC
2.3	Permits and approvals	Obtain necessary permits from ministry of public works	Project Manager, MOESC, Building Commission
2.4	Mobilization ground work	Preparation to start with construction work	Contractor
2.5	Setup facilities onsite	Installations of temporary cabins for contractors to have meetings and monitor work	Contractor
3	Construction Phase	The execution of the project	Project Manager, Building Commission, Project Team
3.1	Preparing of terrain and drainage	Cleaning of terrain and of excavate soil to start with foundation and drainage gutters	Contractor
3.2	Foundation	All the necessary work for completing the concrete foundation with cement	Contractor
3.3	Steel Construction	Erection of steel beams	Contractor
3.4	Walls and floors	Installing walls consisting of 4” bricks, cement board, and finishing layer of floors	Contractor
3.5	Ceiling and Roof	All the necessary work for to complete ceiling on ground and first floor with gypsum and construction of galvanic roof	Contractor

3.6	Doors, Windows, stairs and podium	All the necessary work for installing aluminum doors, sliding windows, stairs and podium.	Contractor and sub-contractor
3.7	Fixed inventory	Installations of sanitary equipment and pumphouse	Contractor
3.8	Paint	Painting of the building inside and outside	Contractor
3.9	Electrical, Water and Security	All the necessary work to complete installation of electricity, water and security systems.	Sub-contractor
3.10	Data and Telephone	All the necessary work to complete cable installation for data and phone systems	Sub-contractor
3.11	Air Conditioning	All the necessary work for completing installation of air conditioning on ground and first floor.	Sub-contractor
4	Post-Construction Phase	Phase after substantial project completion	Contractor and Sub-contractors
4.1	Punch list	To fix defective works	Project Manager, Building Commission, SINTEC
4.1	Site clean-up	Clearing the construction site from materials	Contractor
4.2	Final building inspection	Final inspection prior to completion of works by Architect, building commission and project manager	Project Manager, Building Commission, SINTEC
4.3	Final account	Final payments to contractors and subcontractor for services delivered	Project Manager, Financial Officer
5	Project Management	The day to day management of the project	Project Manager
5.1	Planning	Planning of project activities throughout the lifecycle of the project	Project Manager, Building Commission, SINTEC
5.2	Scheduling	Planning of the project timeline to determine the project duration	Project Manager, Building Commission, SINTEC
5.3	Financial Management	Monitoring of the financial expenditures throughout the project lifecycle	Project Manager, Building Commission
5.4	Meetings	Periodic meetings with stakeholders	Project Manager, Building Commission
5.5	Reports	Periodic progress reports of the project	SINTEC
5.6	Site visits	Visual inspection of the ongoing construction work.	Project Manager, Building Commission

4.3.3 Sequence Activities

The third planning process in project schedule management is sequence activities. Sequence activities can be defined as the process of identifying and documenting relationships among project activities (Project Management Institute, 2017). The schedule management plan, scope baseline, activity list and milestone list were used as inputs to this process. A scheduling tool was used to draw the schedule network

diagram which can be seen in figure 13. A meeting was scheduled with the Project Manager to better understand the relationships of the several activities and to use the correct relationships to draw the schedule.

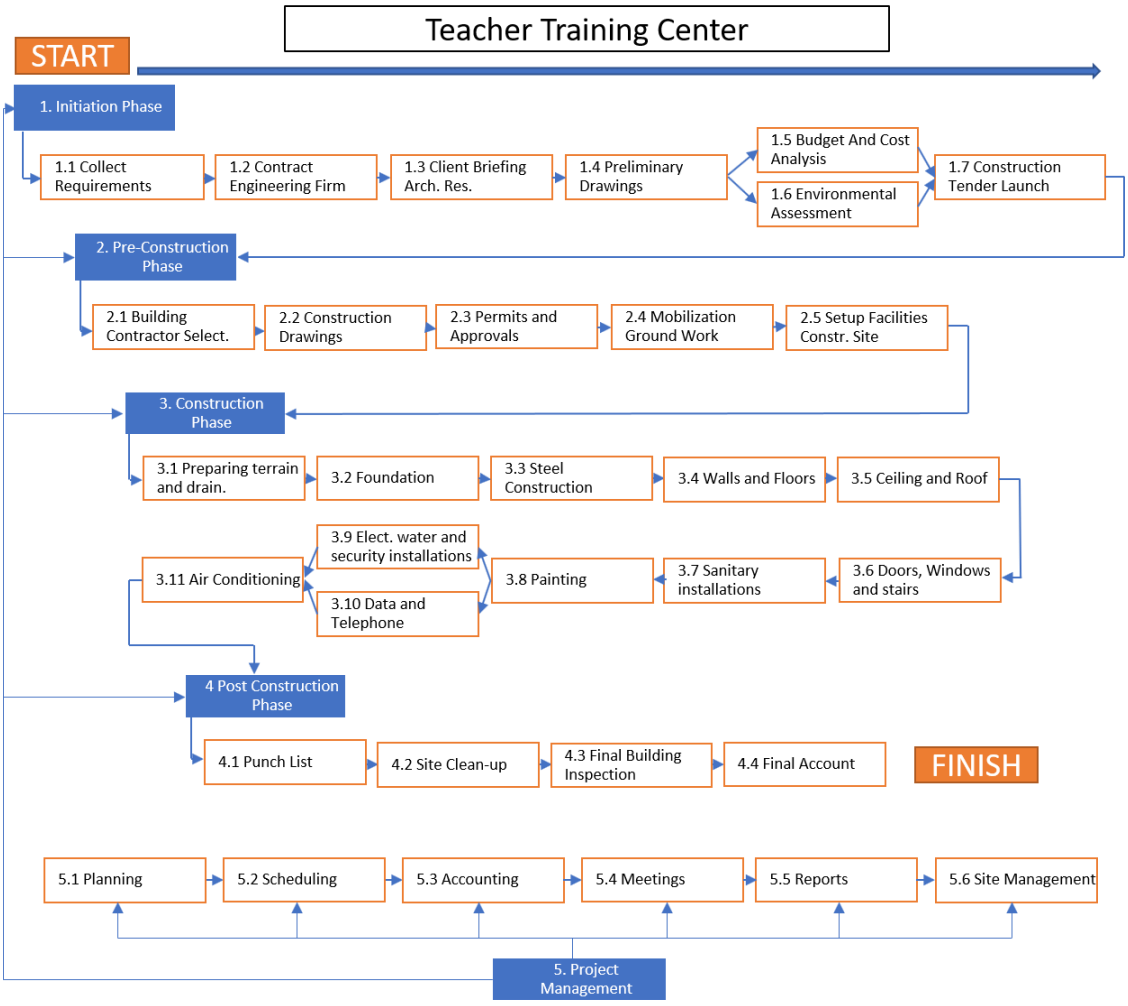


Figure 13 Network Diagram (Compiled by Author, 2018).

4.3.4 Estimate Activity Durations

The fourth planning process of project schedule management is the Estimate Activity Durations process. According to PMI this process can be defined as estimating the number of work periods needed to complete individual activities with estimated resources with the benefit that it provides the amount of time each activity will take to complete (Project Management Institute, 2017). The following was used as an input: schedule management plan, scope baseline, activity list, milestone list, resource calendar, resource requirements and risk register. A meeting was held with the project manager for expert advice and Analogous estimating technique was used a tool to estimate the durations based on historical information and previous completed project of similar nature. The output for this process is detailed in chart 24 below.

Chart 20 Resource Assignment and Activity Duration List (Source: compiled by the author)

ID Nr.	Task Name	Duration	Resource name
1	Initiation Phase	**6.5 Months**	IADB, Project, Manager, MOESC
1.1	Collect client Requirements	2 weeks	Project Manager, Building Commission, MOESC
1.2	Contract Engineering Firm	8 weeks	Project Manager, Building Commission, MOESC
1.3	Client Briefing and Architectural Research	1 week	Project Manager, Building Commission, SINTEC
1.4	Preliminary Drawings and Design	3 weeks	SINTEC
1.5	Determine Budget and Cost analysis	1 week	Project Manager, MOESC
1.6	Environmental Assessment	2 weeks	SINTEC
1.7	Construction Tender launch	3 weeks	Project Manager, MOESC
2	Pre-Construction Phase	**2.25 Months**	Project Manager, SINTEC
2.1	Construction contractor selected	2 weeks	Project Manager, MOESC
2.2	Construction drawings	2 weeks	Project Manager, SINTEC
2.3	Permits and approvals	1 week	Project Manager, MOESC, Building Commission
2.4	Mobilization ground work	2 weeks	Contractor
2.5	Setup facilities onsite	1 week	Contractor
3	Construction Ph3.1ase	**8.25 months**	Project Manager, Building Commission, Project Team
3.1	Preparing of terrain and drainage	2 weeks	Contractor
3.2	Foundation	4 weeks	Contractor
3.3	Steel Construction	4 weeks	Contractor
3.4	Walls and floors	5 weeks	Contractor
3.5	Ceiling and Roof	3 weeks	Contractor
3.6	Doors, Windows, stairs and podium	3 weeks	Contractor and sub-contractor
3.7	Fixed inventory	2 weeks	Contractor

3.8	Paint	3 weeks	Contractor
3.9	Electrical, Water and Security	4 weeks	Sub-contractor
3.10	Data and Telephone	2 weeks	Sub-contractor
3.11	Air Conditioning	2 weeks	Sub-contractor
4	Post-Construction Phase	**2 months**	Contractor and Sub-contractors
4.1	Punch list	4 weeks	Project Manager, Building Commission, SINTEC
4.2	Site clean-up	2 weeks	Contractor
4.3	Final building inspection	1 week	Project Manager, Building Commission, SINTEC
4.4	Final account	1 week	Project Manager, Financial Officer
5	Project Management	N/A	Project Manager
5.1	Planning		Project Manager, Building Commission, SINTEC
5.2	Scheduling		Project Manager, Building Commission, SINTEC
5.3	Financial Management		Project Manager, Building Commission, Financial officier5.5
5.4	Meetings		Project Manager, Building Commission
5.5	Reports		SINTEC
5.6	Site visits		Project Manager, Building Commission

4.3.5 Develop Schedule

Finally, the fifth planning process conducted for project schedule management was Develop Schedule which can be defined as a process of analyzing activity sequences, durations, resource requirements and schedule constraints to create a schedule model for project execution and monitoring and controlling (Project management Institute, 2017). The inputs to this process were the schedule management plan, scope baseline, activity list, milestone list, project schedule network diagram, resource calendar, resource requirements, activity durations and risk register. The tools and techniques used to develop the project schedule were schedule network analysis, leads and lags, data analysis and Microsoft Project 2016. The project schedule developed can be seen in figure 14 below.

ID	Task Mode	Task Name	Duration	Start	Finish
1		**New Training Center for Teachers**	**19 mons**	**Fri 6/15/18**	**Thu 11/28/19**
2		**1. Initiation Phase**	**6.5 mons**	**Fri 6/15/18**	**Thu 12/13/18**
3		1.1 Collect Client requirements	2 wks	Fri 6/15/18	Thu 6/28/18
4		1.2 Contract Engineering Firm	8 wks	Fri 6/29/18	Thu 8/23/18
5		1.3 Client Briefing and Architectural Research	1 wk	Fri 8/24/18	Thu 8/30/18
6		1.4 Preliminary drawings and design	3 wks	Fri 8/31/18	Thu 9/20/18
7		1.5 Determine budget and cost analysis	1 wk	Fri 9/21/18	Thu 9/27/18
8		1.6 Environmental Assesment	2 wks	Fri 9/28/18	Thu 10/11/18
9		1.7 Construction Tender launch	9 wks	Fri 10/12/18	Thu 12/13/18
10		**2. Pre-Construction Phase**	**2.25 mons**	**Fri 12/14/18**	**Thu 2/14/19**
11		2.1 Construction Contractor selected	3 wks	Fri 12/14/18	Thu 1/3/19
12		2.2 Construction Drawings	2 wks	Fri 1/4/19	Thu 1/17/19
13		2.3 Permits and approvals	1 wk	Fri 1/18/19	Thu 1/24/19
14		2.4 Mobilization Ground work	2 wks	Fri 1/25/19	Thu 2/7/19
15		2.5 Setup facilities onsite	1 wk	Fri 2/8/19	Thu 2/14/19
16		**3. Construction Phase**	**8.25 mons**	**Fri 2/15/19**	**Thu 10/3/19**
17		3.1 Preparing of terrain and rainage	2 wks	Fri 2/15/19	Thu 2/28/19
18		3.2 Foundation	4 wks	Fri 3/1/19	Thu 3/28/19
19		3.3 Steel construction	4 wks	Fri 3/29/19	Thu 4/25/19
20		3.4 Walls and floors	5 wks	Fri 4/26/19	Thu 5/30/19
21		3.5 Ceiling and roof	3 wks	Fri 5/31/19	Thu 6/20/19
22		3.6 Doors, windows, stairs and podium	3 wks	Fri 6/21/19	Thu 7/11/19
23		3.7 Fixed inventory	2 wks	Fri 7/12/19	Thu 7/25/19
24		3.8 Paint	3 wks	Fri 7/26/19	Thu 8/15/19
25		3.9 Electrical, water and security	4 wks	Fri 8/16/19	Thu 9/12/19
26		3.10 Data and Telephone	2 wks	Fri 8/16/19	Thu 8/29/19
27		3.11 Air Conditioning	3 wks	Fri 9/13/19	Thu 10/3/19
28		**4. Post Construction Phase**	**2 mons**	**Fri 10/4/19**	**Thu 11/28/19**
29		4.1 Punch list	4 wks	Fri 10/4/19	Thu 10/31/19
30		4.2 Site cleanup	2 wks	Fri 11/1/19	Thu 11/14/19
31		4.3 Final building inspection	1 wk	Fri 11/15/19	Thu 11/21/19
32		4.4 Final account	1 wk	Fri 11/22/19	Thu 11/28/19
33		**5. Project Management**	**19 mons**	**Fri 6/15/18**	**Thu 11/28/19**
34		5.1 Planning	19 mons	Fri 6/15/18	Thu 11/28/19
35		5.2 Scheduling	19 mons	Fri 6/15/18	Thu 11/28/19
36		5.3 Financial Management	19 mons	Fri 6/15/18	Thu 11/28/19
37		5.4 Meetings	19 mons	Fri 6/15/18	Thu 11/28/19
38		5.5 Reports	19 mons	Fri 6/15/18	Thu 11/28/19
39		5.6 Site visits	19 mons	Fri 6/15/18	Thu 11/28/19

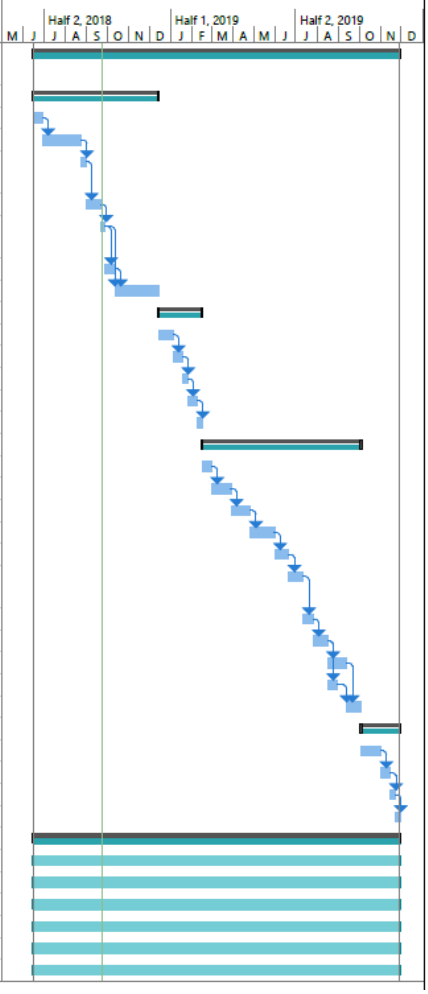


Figure 14 Project Schedule New Training Center for Teachers, (Created by Author, 2018).

4.4 Project Cost Management

According to the Project management Institute, Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget (Project Management Institute, 2017). The first process in Project Cost Management is Plan Cost Management which main output is the Cost Management. The development of the Cost Management Plan is described in the following paragraph. The tools and technique used to develop the Cost Management Plan were expert judgement, data analysis and meetings. The project charter and the schedule management plan were used as inputs for the analysis. (See appendix 5 for template used).

4.4.1 Plan Cost Management

Cost Management Plan Building of a Teacher Training Center

Introduction

The Project Manager is responsible for managing and reporting the project's cost throughout the lifecycle of the project. During the monthly meetings, the project manager will discuss the status of the project and present and review the project's cost performance for the previous month. This performance will be measured using the earned value management principles. The project manager is also responsible for the accounting and cost deviations of the project which will be reported to the project sponsor together with possible solutions on how to bring the project back on budget. The project sponsor will need to authorize these changes after which they will be applied.

Cost Management Approach

The costs for this project will be managed and tracked, at the second level of the work breakdown structure, through control accounts. The financial performance of the project

will be measured by Earned Value management calculations for the control accounts. Credit for work will be assigned at the work package level. The percentage (%) of credit granted to each work package will be calculated based on the amount of work completed at a certain point in time against the total costs required to complete the work package. Costs will be rounded to the nearest dollar and work hours to the nearest whole hour.

The following rules should be followed for cost variances:

- Cost variances of +/- 0.1 in the cost and schedule performances will change the status of the cost to cautionary. These values will be highlighted in yellow in the project status reports.
- Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status to alert. The values will be highlighted in red in the project status reports.

This will require corrective action from the Project Manager in order to bring the cost and schedule performance indexes at the required level. Corrective actions will require a project change request and must be send to the Project Sponsor for approval before it can be applied to the project scope.

Measuring Project Costs

Performance of the project will be measured using Earned Value Management. The following four earned value metrics will be used to measure the project cost performance:

1. Schedule Variance (SV)
2. Cost Variance (CV)
3. Schedule Performance Index (SPI)
4. Cost Performance Index (CPI)

The following should be taken into consideration:

- If the SPI or the CPI has a variance of between 0.1 and 0.2, the project manager must report the reason for the exception to the project sponsor.

- If the SPI or CPI has a variance of greater than 0.2 the project manager must report the reason for the exception and provide a detailed corrective action plan to the Ministry, to bring the projects performance back on track.

Chart 21 Performance measurements SPI and CPI (Source: compiled by the author)

Performance Measure	Yellow	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or between 1.1 and 1.2	Less than 0.8 or greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or between 1.1 and 1.2	Less than 0.8 or greater than 1.2

Reporting format

Cost Management reporting will be done on a monthly basis as part of the project status report. This report will include a section on Cost management which will contain the earned value metrics. The report will also include all cost variances outside of the identified thresholds together with the corresponding corrective actions.

Cost Variance Response

The Control Thresholds for this project is set for a CPI or SPI of less than 0.8 or greater than 1.2. If the project reaches these thresholds, a cost variance corrective action plan is required. The project manager will report options for corrective actions to the project sponsor. Within three business days after the Project Sponsor selects an option for corrective action, the Project Manager will present a formal Cost Variance Corrective Action Plan to the Project Sponsor. This action plan will include the necessary actions to be taken to bring the project back within budget. Upon acceptance of the Cost Variance Corrective Action Plan by the Project Sponsor, it will become part of the project plan.

Cost Change Control Process

All changes to the project budget will follow the established project change request process work flow as displayed in Figure 12 Approvals for project budget/cost changes must be approved by the project sponsor.

Project Budget

The estimated budget for this project is: USD 1,155,277.63. The budget is detailed below with various categories:

Chart 22 Project Budget Overview (Source: compiled by the author)

Item Description	Cost in USD
Labor and Materials	**1,059,887.73**
Contingency Reserve (4%)	**42,395.51**
Management Reserve (5%)	**52,994.39**
Project Grand Total	***1,155,277.63**

*Note: There is no tax included in the total project budget, because this project is being executed by the Ministry of Education, Science and Culture and funded by the Inter-American Development Bank and as such, MOESC will be provided with a tax exemption through the Ministry of Finance.

4.4.2 Estimate Costs

Estimate costs, which is the second process in Project Cost Management, can be described as the process of developing an approximation of the cost of resources needed to complete the project work (Project Management Institute, 2017). After the schedule was developed, the costs for the project were estimated in which the cost management plan and the scope baseline were used as inputs. The tools and techniques used were expert judgement, analogous estimating, and bottom-up estimating. Meetings were conducted with experts from the building commission, the engineering firm and Mrs. Sitih Amat who have knowledge on previous construction projects to determine the most effective means of estimating the budget for the project.

The engineering firm NV SINTEC was advised to estimate the costs for each component of the construction work (bottom up estimating). In addition, the cost estimate included a contingency reserve calculated at 4% and a management reserve calculated at 5%. Expert Judgement was used to identify the percentage allocated for both the contingency reserve and management reserve. The following chart provides an overview of the activity costs estimates.

Chart 23 Activity Cost Estimates (Source: compiled by the author)

WBS Code	Element Name	Duration	Labor Cost	Material Costs	Total Cost ($)	Resources
1	**Initiation Phase**	**6.5 Months**			**51,100.00**	
1.1	Collect Client Requirements	2 weeks	1,800.00	100.00	1,900.00	Computer, Internet, Relevant literature, Print outs.
1.2	Contract Engineering Firm	8 weeks	37,500.00	2,500.00	40,000.00	Computer, Internet.
1.3	Client Briefing and Architectural Research	1 week	1,950.00	50.00	2,000.00	Computer, Internet, Books, Print outs.
1.4	Preliminary Drawings and Design	3 weeks	1,300.00	200.00	1,500.00	Computer, Internet, AutoCAD software
1.5	Determine Budget and Cost analysis	1 week	1,100.00	100.00	1,200.00	Computer, Printer
1.6	Environmental Assessment	2 weeks	2,500.00	500.00	3,000.00	Architectural drawings, project documents.
1.7	Construction Tender launch	3 weeks	1,400.00	100.00	1,500.00	Bidding documents, Internet, Newspaper
2	**Pre-Construction Phase**	**2.25 Months**			**25,500.00**	
2.1	Construction contractor selected	2 weeks	2,500.00	500.00	3,000.00	Computer, Internet, Contract
2.2	Construction drawings	2 weeks	1,400.00	100.00	1,500.00	Architectural drawings, AutoCAD, Computer, printer.
2.3	Permits and approvals	1 week	750.00	250.00	1,000.00	Authorized documents, Printer, Computer.
2.4	Mobilization ground work	2 weeks	10,000.00	5,000.00	15,000.00	Excavators, dump truck, Crane.
2.5	Setup facilities onsite	1 week	3,000.00	2,000.00	5,000.00	Truck, crane, excavator.
3	**Construction Phase**	**8.25 months**			**893,787.51**	
3.1	Preparing of terrain and drainage	2 weeks	10,515.41	15,773.12	26,288.54	Suppliers and (sub) contractors quote
3.2	Foundation	4 weeks	7,757.19	11,635.79	19,392.98	Suppliers and (sub) contractors quote
3.3	Steel Construction	4 weeks	21,595.27	32,392.91	53,988.18	Suppliers and (sub) contractors quote
3.4	Walls and floors	5 weeks	72,659.63	108,989.44	181,649.07	Suppliers and (sub) contractors quote
3.5	Ceiling and Roof	3 weeks	28,330.40	42,495.60	70,826.00	Suppliers and (sub)

						contractors quote
3.6	Doors, Windows, stairs and podium	3 weeks	29,851.61	44,777.41	74,629.02	Suppliers and (sub) contractors quote
3.7	Fixed inventory	2 weeks	10,581.54	15,872.31	26,453.85	Suppliers and (sub) contractors quote
3.8	Paint	3 weeks	13,215.00	19,822.50	33,037.50	Suppliers and (sub) contractors quote
3.9	Electrical, Water and Security	4 weeks	118,970.31	178,455.47	297,425.78	Suppliers and (sub) contractors quote
3.10	Data and Telephone	2 weeks	5,158.68	7,738.01	12,896.69	Suppliers and (sub) contractors quote
3.11	Air Conditioning	2 weeks	38,879.96	58,319.95	97,199.91	Suppliers and (sub) contractors quote
4	**Post-Construction Phase**	**2 months**			**25,500.00**	
4.1	Punch list	4 weeks	6,000.00	9,000.00	15,000.00	Project Manager, Architect
4.1	Site clean-up	2 weeks	3,000.00	4,500.00	7,500.00	Truck, excavator,
4.2	Final building inspection	1 week	800	200.00	1,000.00	Final report
4.3	Final account	1 week	1,800	200.00	2,000.00	
5	**Project Management**	**N/A**			**64,000.00**	
5.1	Planning	-	14,000.00	1,000.00	15,000.00	Computer, Printer, MS Project
5.2	Scheduling	-	14,000.00	2,000.00	16,000.00	Computer, Printer, MS Project
5.3	Financial Management	-	10,000.00	2,000.00	12,000.00	Computer, Printer, QuickBooks
5.4	Meetings	-	4,500.00	1,500.00	6,000.00	Computer, Printer,
5.5	Reports	-	4,500.00	500.00	5,000.00	Computer, Printer,
5.6	Site visits	-	6,000.00	4000.00	10,000.00	Computer, Printer, Safety gear

4.4.3 Determine Budget

The third process of project cost management is Determine Budget, which can be defined as the process of aggregating the estimated costs of individual activities or work packages to establish and authorized cost baseline (Project Management Institute, 2017). Using the information from the cost management plan, scope baseline, project schedule, risk register and cost estimates, the budget was determined by aggregating the costs for each of the work packages. To develop this process, expert judgement, funding limit reconciliation and data analysis were used as a tool. In the following Chart the cost baseline is displayed.

Chart 24 Cost Baseline Form (Adapted from www.es.scribd.com)

Project Name: Building of a Training Center for Teachers	
Project Manager: Sitih Amat	
Project Sponsor: IADB	
Date Prepared: October 21, 2018	
Submitted to: IADB	
Total Cost Authorization:	

COST BASELINE

EXPENSE	Qty	UNIT COST	TOTAL COST	PURPOSE
Administrative/Professional				
Consultants	2	4,700.00	9,400.00	Labor Only
Office Materials	1	4,800.00	4,800.00	Materials Only
Engineering Firm	1	45,400.00	45,400.00	Labor Only
Main Contractor				
Building Contractor	1	134,527.51	134,527.51	Labor Only
Construction Materials	1	189,291.25	189,291.25	Material Only
Sub Contracts				
Sub-Contractor Doors, Windows Stairs podium	1	29,851.61	29,851.61	Labor Only
Sub-Contractor Doors, Windows Stairs podium	1	44,777.41	44,777.41	Material Only
Sub-Contractor Ceiling and Roof	1	28,330.40	28,330.40	Labor Only
Sub-Contractor Ceiling and Roof	1	42,495.60	42,495.60	Material Only
Sub-Contractor Paint	1	13,215.00	13,215.00	Labor Only
Sub-Contractor Paint	1	19,822.50	19,822.50	Material Only
Sub-Contractor Electrical Installations	1	105,020.64	105,020.64	Labor Only
Sub-Contractor Electrical Installations	1	157,530.64	157,530.64	Material Only
Sub-Contractor Water Installations	1	17,015.80	17,015.80	Labor Only
Sub-Contractor Water Installations	1	25,523.71	25,523.71	Material Only
Sub-Contractor Security Installations	1	7,515.62	7,515.62	Labor Only
Sub-Contractor Security Installations	1	11,273.44	11,273.44	Material Only
Sub-Contractor Data and Telephone	1	5,158.68	5,158.68	Labor Only
Sub-Contractor Data and Telephone	1	7,738.01	7,738.01	Material Only
Sub-Contractor Air Conditioning	1	38,879.96	38,879.96	Labor Only
Sub-Contractor Air Conditioning	1	58,319.95	58,319.95	Material Only
Project Management				
Project Manager	1	28,000.00	28,000.00	Labor Only
Financial Officer	1	10,000.00	10,000.00	Labor Only
Project Team	2	6,500.00	13,000.00	Labor Only
Office Materials	1	13,000.00	13,000.00	Labor Only
Total cost Material and Labor			**1,059,887.73**	
Contingency Reserve (4%)			**42,395.51**	
Management Reserve (5%)			**52,994.39**	
Grand Total			**1,155,277.63**	

Approvals	
Printed Name: Title:	Printed Name Title

The monthly cashflow can be seen in the S-Curve below, in chart. To develop this curve, data was used from the schedule baseline (time) and the activity cost estimates (cost). Microsoft excel was used as a tool to combine these data sets and generate the S-Curve.

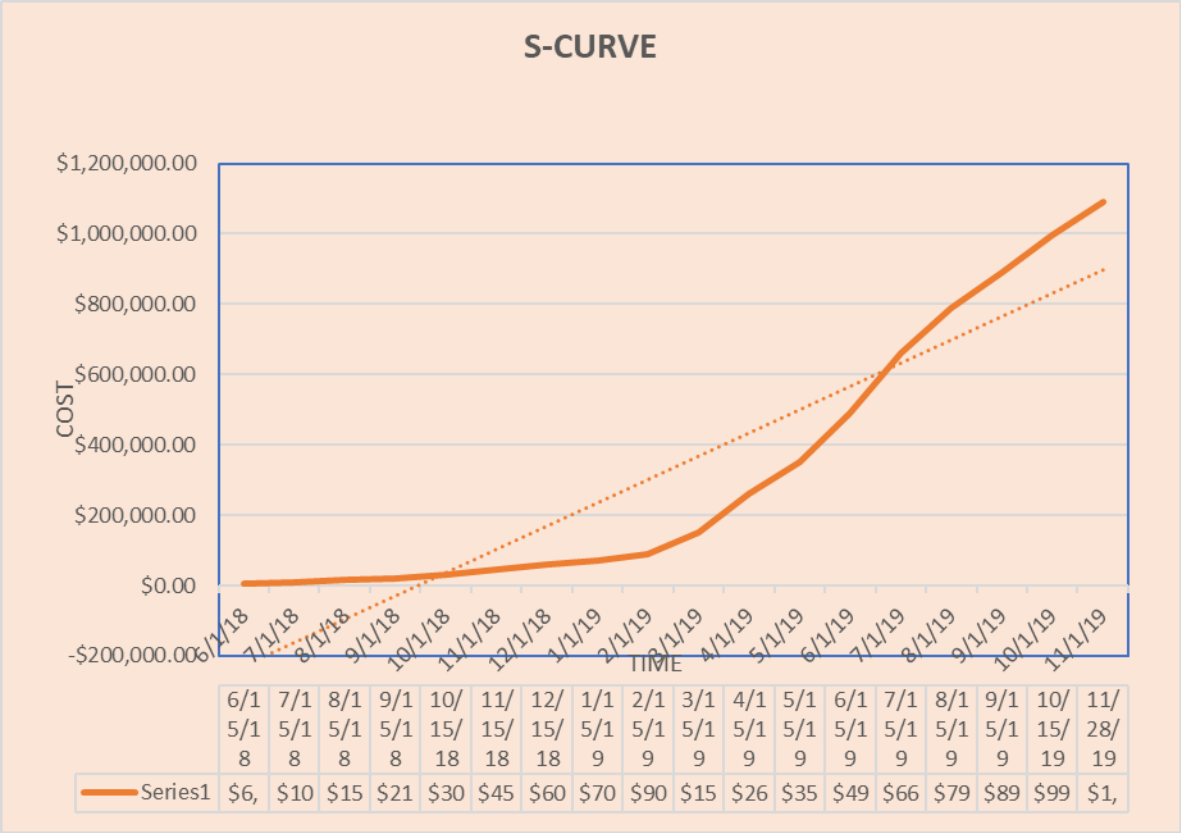


Figure 15 S-Curve, (Compiled by Author, 2018).

4.5 Project Risk Management

Introduction

Project Risk Management can be defined as the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project (Project Management Institute, 2017). Project Risks were already identified during the development of the project charter and were taken into consideration while developing the Schedule and Cost management plan. To identify and plan for project risks, this risk management plan was developed, qualitatively analyzed and responses were planned for each identified risk. Risks were not quantitively analyzed due to the fact that this type of analysis requires specialized risk software and expertise and consumes additional time and cost.

4.5.1 Plan Risk Management

The Plan Risk Management process defines how to conduct risk management activities for a project. As described in the PMBOK® guide, all the subsidiary plans developed for this project were used as an input, together with the project charter, and the stakeholder register, to develop the Risk Management Plan. The tools and techniques that were used are expert judgement, meetings with project team and stakeholder analysis. The Risk management plan developed can be seen in the following paragraphs. (See appendix 8 for template used).

Risk Management Plan Building of a Teacher Training Center

Risk Management Approach

The PMBOK® Guide defines a project risk as an uncertain event or condition that, if it occurs has a positive or negative effect on one or more project objectives. This risk management plan for the building of a training center for teachers, defines the risk management approach that will be taken when addressing risks that will affect the project. The various risks identified by the project team will be scored and ranked. The most likely and highest impact risks are added to the project schedule to ensure the

project manager takes necessary steps to implement the mitigation response at an appropriate time during the project schedule. The project manager will provide a status update on the risks in the monthly team meetings.

4.5.2 Identify Risks

Risks were identified during the development of the project charter and further analyzed during the development of the subsidiary plans. After the identification process, risks are grouped and categorized in the Risk Breakdown Structure (RBS). Grouping risks in categories leads to the development of effective risk response by focusing attention and effort on the areas with highest risk exposure or by developing risks responses that addresses groups of related risks (Project Management Institute, 2017).

Risk Categories

The following are the risk categories identified for the new Training Center for teachers of the Ministry of Education research and Science:

- Technical Risk
- External Risk
- Management Risk
- Organization Risk

Risk Breakdown Structure

The risk breakdown structure (RBS) gives a hierarchical representation of potential sources of risks which helps the project team with a broader view of sources from which risks may arise. The following figure gives an overview of the RBS for the Teacher Training Center project.

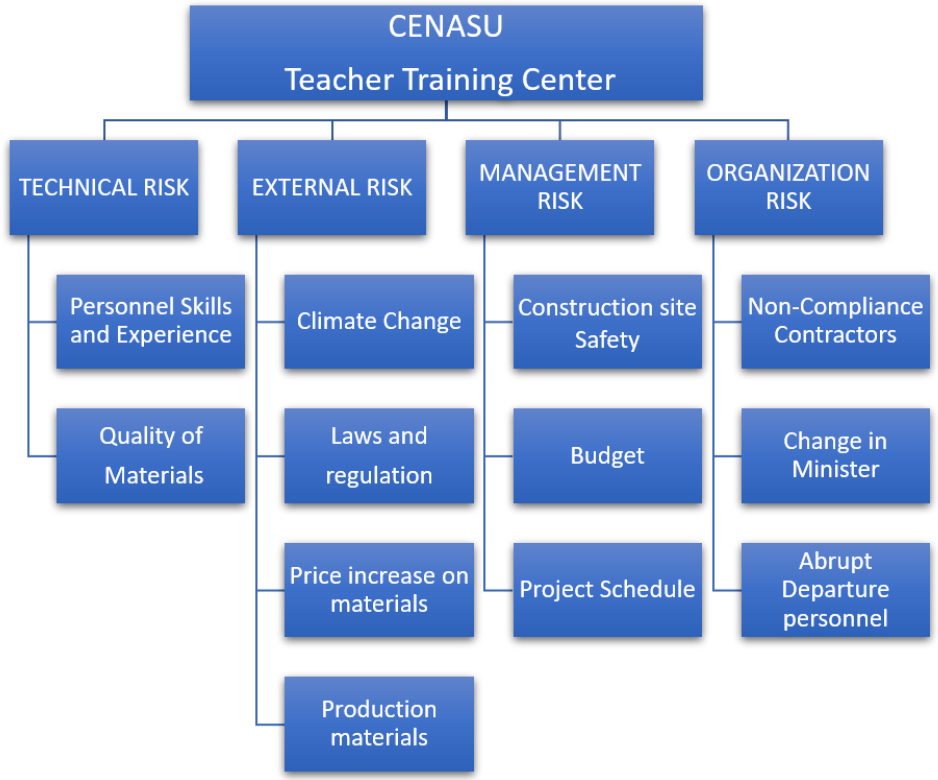


Figure 16 Risk Breakdown Structure, (Compiled by Author, 2018).

The Risk Register

Risk can be defined as an uncertain event or condition that if it occurs has a positive or negative effect on one or more project objectives (Project Management Institute, 2017). Risk may be considered to be related to an opportunity or a loss or the presence of uncertainty for an organization. Every risk has its own characteristics that requires particular management and analysis. One of the outputs from the identify risk process is the risk register. The risk register captures details of the identified project risks. The risk registers also records results from qualitative risk analysis, plan risk responses and monitor risk which are conducted throughout the project. Based on the project size and complexity it may contain limited or extensive risk information (Project management Institute, 2017). The risk register for this project can be seen in the following table.

Chart 25 Risk Register (Source: created by author, 2018)

ID	Risk	Category	Date	Status	Responsible	Level of Risk	Cost (USD)	Event Trigger	Risk Close Date
1	Poor personnel skill set and work experience of sub-contractors performing not at the desired level causing deficiencies in outputs.	Technical	21-11-2018	Open	Engineering Firm	Medium	10,000		
2	Damage to materials by unskilled construction site workers or working error causing cost increase to purchase replacement material.	Technical	21-11-2018	Open	Engineering Firm	Low	9,000		
3	Weather conditions persisting more than one day causing scheduling delays.	External	21-11-2018	Open	Engineering Firm	High	60,000		
4	Regulatory departments in government not providing permit approvals to start with construction in a timely manner causing scheduling delays.	External	21-11-2018	Open	Project Manager	High	50,000		
5	Price increase on materials being purchased as the project progresses causing requests from contractors for contract amendments for increased costs.	External	21-11-2018	Open	Project Manager	Medium	40,000		
6	Fabrication of steel elements taking longer than expected by supplier due to production delays causing delay in delivery at project site.	External	21-11-2018	Open	Engineering Firm	Low	9,000		
7	Incidents at project site due to workforce not taking safety instructions into account resulting in injuries.	Management	21-11-2018	Open	Engineering Firm	Medium	11,000		
8	Project budget not accurately calculated causing insufficient funds to complete the project.	Management	21-11-2018	Open	Project Manager	Medium	30,000		
9	Materials arriving later than planned due to late shipment processing causing scheduling delays.	Management	21-11-2018	Open	Project Manager	Medium	20,000		
10	Contractors not performing according to contractual agreements causing disputes.	Organization	21-11-2018	Open	Project Manager	Medium	11,000		

11	New minister taking organizational decisions resulting in design changes causing project team to request unplanned changes.	Organization	21-11-2018	Open	Project Manager	Low	7,000		
12	Abrupt departure of project personnel resulting in critical tasks not being carried out according to the implementation schedule.	Organization	21-11-2018	Open	Project Manager	Low	8,000		

4.5.3 Qualitative Risk Analysis

In addition to the risks identified, the risk register is also being used to capture information related to risk prioritization based on its probability of occurrence and impact which are aspects of qualitative risk analysis. According to the PMBOK® Guide qualitative risk analysis is the process of prioritizing individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics. The risk formula used for this project can be seen in the table below.

Chart 26 Risk Formula (Source: created by author, 2018)

PROBABILITY (P)		Impacts on Project objectives		IMPACT (I)		RISK R=PxI	DEGREE Of RISK	SUGGESTED ACTION
		Time	Cost					
Very likely >71%	5	>8 weeks added to completion date	>$100.000	Very high	5	17 - 25	Unacceptable	Project should not proceed if risk cannot be reduced
Likely 51 – 70%	4	>4 weeks added to completion date	$50.000 to $100.000	High	4	13 - 16	Unacceptable	Work must not start until risk has been reduced
Probable 31 – 50%	3	>3 weeks added to completion date	$10.000 to $ 50.000	Medium	3	9 - 12	Significant	Reduce risk. Mitigate or transfer
Unlikely 11 – 30%	2	1 to 3 weeks on activity: no change to completion date	$1.000 to $10.000	Low	2	5 - 8	Tolerable	Consider risk reduction measures
Negligible <10%	1	<1 week to activity: no change to completion date	< $1.000	Very low	1	1 - 4	Trivial	Monitor work

In order to perform qualitative risk analysis, the risk management plan, risk register and stakeholder register were used as an input. Tools and techniques used during this process were expert judgment, interviews (meeting with the project manager), the risk probability and impact assessment. In the following table the probability and impact matrix are displayed. Based on the probability and the possible impact on the project the degree of risk is indicated with several colors. The red zone represents high risks, yellow zone moderate risks and green zone low risks. A risk value between 1-4 is considered trivial, 5-8 tolerable, 9-12 significant, and above 12 is unacceptable. The table below shows the risk response based on the degree of risk.

4.5.4 Plan Risk responses

Plan Risk responses is the process of developing options, selecting strategies, and agreeing on actions to address project risks (Project Management Institute, 2017). The inputs for this process were risk management plan, cost baseline, and several project documents. The tools and techniques used were expert judgement and data gathering.

Chart 27 Risk Mitigation (Source: created by author, 2018)

ID	RISK	BEFORE CONTROLS			RESPONSE	AFTER CONTROLS		
		P	I	R= pxi	*Avoid, transfer, mitigate, accept & manage*	P	I	R= pxi
1	Personnel skills and experience	3	5	15	Include in terms of reference of contractor on specific experience and skills needed for personnel to perform certain tasks	2	3	6
2	Quality of Materials	2	3	6	Implement an all risk insurance plan	1	3	3
3	Climate Change	4	4	16	Schedule work based on weather expectations in certain months	2	4	8
4	Laws and Regulation	4	4	16	Ensure permits are in accordance with local laws and that these are submitted and obtained in advance	2	2	4
5	Price increase on materials	2	5	10	Contact suppliers and meet to discuss the contract terms and conditions	1	4	4
6	Production of Materials	1	5	5	Have all items scheduled to be delivered 3 weeks in advance and communicate with vendors daily to check on status of goods.	1	2	2
7	Construction site safety	2	5	10	Safety at the site should be strict and indicated by signs	2	4	8
8	Budget	2	5	10	The budget for the construction is tight and should be monitored weekly on any deviations to stay within budget	1	3	3
9	Project Schedule	4	3	12	Activities should be tracked and status reported on a bi weekly basis	2	3	6
10	Non-Compliance contractors	3	4	12	Have frequent inspection visits to ensure compliance with technical specifications and performance is good	2	2	4
11	Change in Minister	2	4	8	Have project reports ready in case there is a change of minister to inform on the project objectives	1	3	3
12	Abrupt departure personnel	2	3	6	Agree on transition period when personnel departing allowing new employees to get onboard easily	1	2	2

4.6 Project Stakeholder Management

Introduction

Project Stakeholder Management was the last process conducted as part of the initiation process group. According to the PMBOK® guide it includes the processes required to identify people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution (Project Management Institute, 2017). Project Stakeholder Management was the process to be conducted in the initiation and planning process groups. Specifically, the identify stakeholders and the plan stakeholder engagement will be developed in the following paragraphs.

4.6.1 Identify Stakeholders

The Identify Stakeholders process can be defined as identifying stakeholders regularly and documenting relevant information regarding their interest, involvement, interdependencies, influence, and potential impact on project success. The benefit of this process is that it enables the project team to identify the appropriate focus for engagement of each stakeholder of group of stakeholders (Project Management Institute, 2017). The main output of this process is the Stakeholder Register, which is a document that contains information on the identified stakeholders that includes identification information, assessment information and stakeholder classification. The stakeholders involved in this construction project of the Teacher Training Center were identified using the inputs, project charter, business documents, project management plan and project documents. The tools and techniques used were expert judgement, data gathering through brainstorming, data analysis, and stakeholder mapping. An overview of the identified stakeholders can be seen in stakeholder register in Chart 28.

Chart 28 Stakeholder Register (Source: created by author, 2018)

ID	NAME	ROLE	IMPACT	CURRENT STATE	DESIRED STATE	ISSUES, OPPORTUNITIES, RISKS	MITIGATION STRATEGIES AND ACTIONS
1	Ministry of Education, Science and Culture	Policy and key decision Maker	H	L	L	Risk: change in scope and management	Inform about the committed costs and delays
2	Project Executing Unit	Managing the project	H	L	L	Risk: scope and management change	Inform about the committed costs and delays
3	Inter-American Development Bank	Project Sponsor	H	S	S	Issue: budget constraints	Monitor progress closely
4	SINTEC NV	Design and technical supervision	H	L	L	Risk: changes in delivery schedule, material deviation, schedule delays	Monitor closely and report any potential delays in early stage
5	Building Commission MOESC	Technical counterpart from the Ministry	H	S	S	Risk: change in scope and management	Inform on progress and any changes
6	Main Contractor Construction	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
7	Subcontractor Electrical installation	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
8	Subcontractor AC installation	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
9	Subcontractor Water installations	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
10	Subcontractor Security System installations	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
11	Subcontractor Data and Telephone Network Installation	Professional contractor	H	S	S	Risk: Lack of concern, avoid safety instructions, poor workers	Have checkpoint meetings, frequent site visits, constant monitoring
12	Vendors and Suppliers Materials	Material and services providers	H	S	S	Risk: delivery can take more time than expected, Opportunity: get familiar with new technology and materials	Monitor closely and report any potential delays in early stage
13	CENASU Organization	Teacher organization	L	S	S	Opportunity: get involve in the project, provide inputs on furnishing where they will work	Receive updated information progress of the construction work
14	Teachers	School teachers who will be using the facility	L	U	N	Opportunity: get involved in the project	Receive updated information progress of the construction work
15	Local Community	Surrounding neighbors and public	L	U	N	Risk: resistance activities	Organize informational sessions with detailed presentations

U	*= Unaware, has no information of the project*		**IMPACT**	
R	*= Resistant, aware of project and resistant to the changes and impacts of it*			
N	*= Neutral, aware of project but is neither supportive or resistant*		**H**	*High*
S	*= Supportive, aware of the project and supports the impacts and changes*		**M**	*Medium*
L	*= Leading, aware of the project and actively engaged to ensure success*		**L**	*Low*

After the stakeholders are identified they have to be prioritized to understand their level of engagement. This helps identifying stakeholders based on their power and interest in the project through the Power/interest Grid matrix. According to the PMBOK® Guide the Power/Interest grid is a technique that supports grouping of stakeholders according to their level of authority (power), level of concern about the projects outcomes (interest), ability to influence the outcomes of the project (influence), or ability to cause changes to the projects planning or execution (Project management Institute, 2017). An overview of this matrix can be found in Figure 17 below.

POWER		
High	KEEP SATISFIED **Inter-American Development Bank**	MANAGE CLOSELY **Ministry of Education Science and Culture** **Project Executing Unit** **Building Commission MOESC** **SINTEC NV** **Head Contractor**
Low	MONITOR **CENASU** **Local Community** **Teachers**	KEEP INFORMED **Vendors and Suppliers** **All Subcontractors**
	Low **INTEREST** *High*	

Figure 17 Power/Interest Grid Matrix, Compiled by Author, 2018.

4.6.2 Plan Stakeholder Engagement

Plan Stakeholder Engagement is the process of developing approaches to involve stakeholders based on their needs, expectations, and potential impact on the project. A

benefit of this process is that it provides an actionable plan to interact effectively with stakeholders (Project Management Institute, 2017). The project manager of the project Building Training Center for Teacher will be responsible for engaging with stakeholders through the lifecycle of the project. For support in this process, the stakeholder register should be used by the project manager which provides important information on the identified stakeholders. The level of engagement will vary at the different stages of the project. In order to make use of the correct level of engagement, the Stakeholder Engagement Matrix below in Chart 33 has been developed for this project.

Chart 29 Stakeholder Engagement Matrix (Source: created by author, 2018)

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
Ministry of Education Science and Culture					C D
Project Management Unit					C D
Inter-American Development Bank				C D	
SINTEC NV					C D
Head Contractor				C D	
Subcontractors				C D	
Suppliers				C D	
Teachers	C			D	
Local Community	C		D		

***C** indicates the current engagement*

***D** indicates the desired engagement*

The main output from the Plan Stakeholder Engagement process is the stakeholder engagement plan. According to the PMBOK® guide, the stakeholder engagement plan identifies the strategies and actions required to promote productive involvement of stakeholders in decision-making and execution. Inputs that were used for the stakeholder engagement plan are, project charter, risk register, stakeholder register, and project schedule. The tools and techniques used are expert judgement, data gathering and data analysis. The developed stakeholder engagement plan can be seen in chart 30 and appendix 9.

Chart 30 Stakeholder Engagement Plan (Source: created by author, 2018)

Stakeholder	Potential role in the activity	Engagement Strategy	Follow-up strategy
Ministry of Education Science and Culture	Facilitates high level input to the project coordination unit	Inform the Ministry about progress of the project through the Permanent Secretary in monthly/weekly management meetings.	The PCU will be managing stakeholder engagement and will be following up with the ministry in all aspect of the project
Project Management Unit	Manages the project through the appointed Project manager	Involve all stakeholders as much as possible in stakeholders' meetings.	PCU follows up and keeps all stakeholders informed by email
Inter-American Development Bank	Monitors the project activities and provides non-objection	Keep the Bank informed through monthly status meetings with the Project Team Leader	PCU follows up and keeps all stakeholders informed by email
SINTEC NV	Technical supervision of the project	Involve a representative of the firm in weekly meetings	PCU follows up and keeps all stakeholders informed by email
Head Contractor	Carries out main construction work	Involve a representative of the firm in weekly meetings	PCU follows up and keeps all stakeholders informed by email
Subcontractors	Carries out specific assignments	Involve a representative of the firm in weekly meetings	PCU follows up and keeps all stakeholders informed by email
Suppliers	Responsible for delivery of specific materials	Involve a representative of the firm in weekly meetings	PCU follows up and keeps all stakeholders informed by email
Teachers/CENASU	Provides input in General, user of facility	Involve CENASU in progress meetings with the Permanent Secretary	PCU follows up and keeps all stakeholders informed by email
Local Community	Provides information in General	Inform public on objective of the project through public events	PCU follows up and keeps all stakeholders informed by email

5 CONCLUSIONS

1. This Project Management Plan was created using the analytical research method and the sixth edition of the PMBOK® Guide, to be used as a guide for the construction of the Training Center for Teacher's project and a tool for the project team.
2. The Project Charter was the first subsidiary element of the Project Management Plan created as a deliverable for specific objective number one. Using a template as a guide, the project Charter includes the business needs and objectives, project description, initial project risks, project requirements, milestones and project budget. An important aspect of this project charter was the identification of the project manager and the sponsor's authorization to formerly start with the project.
3. The Scope Management Plan, which serves to define and specify the scope, was created as the deliverable for specific objective number two. Using a template, important aspect such as the WBS and the WBS dictionary were developed by gathering information during meetings with the project team and document review.
4. The Schedule Management Plan, the deliverable from specific objective number three, was developed using a template which included the Activity List, Schedule Network Diagram and the project Gantt Chart to manage the project schedule throughout the project lifecycle and to ensure a timely completion of the project within the time constraints.
5. The Cost Management Plan, the deliverable form specific objective number four, was created using a template to adequately develop the project budget and to serve as a guide in the development of the cost performance measures such as the Cost Baseline and other project funding requirements.
6. The deliverable for specific objective number five, the Risk Management Plan was created using a template. In addition, to capture and categorize project risks so that effective risk responses could be planned a Risk Register was developed

along with a qualitative risk analysis. Quantitative Risk Analysis was not performed during this process as the tools were not available for use.

7. The Stakeholder Engagement Plan, developed for specific objective number six, was developed using a chart. Along with this plan, which was created to identify on how to engage with stakeholders, what strategy to use and what their specific roles are, the stakeholder register was also developed.

6 RECOMMENDATIONS

1. The Project Coordination Unit of the Ministry of Education Science and Research should employ formal Project Management Methods based on the PMBOK® methodology and the development of project management plans should be mandatory for all major complex projects.
2. The Project Coordination Unit of the Ministry of Education Science and Research should develop standard project management initiation and planning documents which should be approved by the Ministry prior to moving to the execution phase of a project.
3. The Ministry of Education Science and Research should invest in the technical project team (the building commission) that manages all infrastructure related projects within the Ministry by providing training in the use of standard developed project management documents.
4. The Project Coordination Unit of the Ministry of Education Science and Research should develop a training plan for their staff and staff of the Ministry in the efficient use of project management tools and techniques and soft and social skills.
5. The Project Coordination Unit of the Ministry of Education Science and Research should invest in the implementation project information system which includes a database for best practices and lessons learned in project management that can serve as reference for future projects and historical information.
6. The Project Coordination Unit of the Ministry of Education Science and Research should put more emphasis to integrate sustainable principles and methodologies in future construction projects.
7. The Project Coordination Unit of the Ministry of Education Science and Research should consider the use of all the templates developed for the construction of the Training Center for teachers as a basis for future construction projects.

7 BIBLIOGRAPHY

Achari D. P. (2014. Research Methodology: A guide to ongoing Research Scholars in Management. [Google Books version]. Retrieved from https://books.google.sr/books?id=rRhKDwAAQBAJ&printsec=frontcover&dq=Research+Methodology:+A+guide+to+ongoing+Research+Scholars+in+Management.&hl=en&sa=X&ved=0ahUKEwi554roh8HdAhUrtlkKHVOlCVAQ6AEIJDAA#v=onepage&q=Research%20Methodology%3A%20A%20guide%20to%20ongoing%20Research%20Scholars%20in%20Management.&f=false

Bridges, J. (2018). The Basics of Project Cost Management. Retrieved from https://www.projectmanager.com/training/basics-project-cost-management

Camilleri, E. (2016). *Project Success: critical factors and behaviors*. [Google Books version]. Retrieved from https://books.google.sr/books?id=h5TsCwAAQBAJ&pg=PA112&dq=Project+Success:+critical+factors+and+behaviors&hl=en&sa=X&ved=0ahUKEwizz6mNiMHdAhVqplkKHc5gDiIQ6AEIJDAA#v=onepage&q=Project%20Success%3A%20critical%20factors%20and%20behaviors&f=false

Change Request Template. Retrieved from https://www.projectmanagementdocs.com/template/project-documents/change-request/

Cost Baseline Form (2018). Retrieved from https://es.scribd.com/document/365214772/Cost-Baseline-Template

Eskerod P. & Jepsen A. L. (2013). Project Stakeholder Management. [Google Books version]. Retrieved from https://books.google.sr/books?id=U4lRE6jgWo4C&printsec=frontcover&dq=project+stakeholder+management&hl=en&sa=X&ved=0ahUKEwiO0OHt56_eAhVBzFMKHab-C0EQ6AEIJTAA#v=onepage&q=project%20stakeholder%20management&f=false

Hillson D. (2012). Managing Risk in Projects. [Google Books version]. Retrieved from https://books.google.sr/books?id=g-oPLRPcZVEC&printsec=frontcover&dq=project+risk+management&hl=en&sa=X&ved=0ahUKEwj1i6iB5K_eAhUQzlMKHcp7D_IQ6AEIMDAC#v=onepage&q=project%20risk%20management&f=false

Monnappa A. (2018). Project Scope Management: What it is and why it is important. Retrieved from https://www.simplilearn.com/project-scope-management-importance-rar89-article

Moustafaev J. (2015). Project Scope Management. A practical guide to requirements for engineering, product, construction, IT and Enterprise Projects. [Google Books version]. Retrieved from https://books.google.sr/books?id=DXBYBQAAQBAJ&printsec=frontcover&dq=project+scope+management&hl=en&sa=X&ved=0ahUKEwjl6Ofoza_eAhUD3lMKHWt1DQ8Q6AEIJTAA#v=onepage&q=project%20scope%20management&f=false

Program Operations Manual Su-L1038 (2016). MOESC Project Coordination Unit.

Project Charter Template. Retrieved from https://www.projectmanagementdocs.com/template/project-initiation/project-charter-multi-page-version/

Project Management Institute. (2017). *A Guide to the Project Management Body of Knowledge, (PMBOK® Guide) - Sixth Edition*. USA: Project Management Institute, Inc.

Risk Management Plan Template. Retrieved from https://www.projectmanagementdocs.com/template/project-planning/risk-management-plan/

Schedule Management Plan Template. Retrieved from https://www.projectmanagementdocs.com/template/project-planning/schedule-management-plan/

Scope Management Plan Template. Retrieved from https://www.projectmanagementdocs.com/template/project-planning/scope-management-plan/

Singh, G. (2013). *Information Sources, Services and Systems*. [Google Books version]. Retrieved from https://books.google.sr/books?id=FGRakwFqU4cC&printsec=frontcover&dq=Information+Sources,+Services+and+Systems&hl=en&sa=X&ved=0ahUKEwj_jOe7iMHdAhVrplkKHUzhDHsQ6AEIJDAA#v=onepage&q=Information%20Sources%2C%20Services%20and%20Systems&f=false

Sintec NV (2018). Draft Final Report: Consultancy services for design validation and construction supervision of the Centre for continuing education for Suriname (CENASU).

Stakeholder Engagement Plan. Retrieved from https://www.slideshare.net/measureevaluation/stakeholder-engagement-11369777

Stokes P., & Wall T. (2014). *Research methods.* [Google Books version]. Retrieved from https://books.google.sr/books?id=EJtMDwAAQBAJ&pg=PR5&dq=Research+methods.+UK:+Palgrave+stokes+wall&hl=en&sa=X&ved=0ahUKEwi1-d2jisHdAhWsslkKHcz2DhkQ6AEIKTAB#v=onepage&q=Research%20methods.%20UK%3A%20Palgrave%20stokes%20wall&f=false

Villanova University, Bisk (2018). Project Cost Management Strategies. Retrieved from https://www.villanovau.com/resources/project-management/project-cost-management-strategies/#.W9kmKmhKiUk

WBS Dictionary Template. Retrieved from https://planningengineer.net/wbs-dictionary-template/

Westland J. (2018). Project Integration management – A quick guide. Retrieved from https://www.projectmanager.com/blog/project-integration-management-a-quick-guide

Wikipedia (2018). Schedule (project management). Retrieved from https://en.wikipedia.org/wiki/Schedule_(project_management)

Work Package Form. Retrieved from https://planningengineer.net/wbs-dictionary-template/

8 APPENDICES

Appendix 1: FGP Charter

PROJECT CHARTER **Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries.**	
Date	**Project Name:**
20 May 2018	Project Management Plan for the building of a Training Centre for Teachers
Knowledge Areas / Processes	**Applicacion Area (Sector / Activity)**
Knowledge areas: Project Integration Management, Project Scope Management, Project Schedule Management, Project Cost Management, Project Risk Management, Project Stakeholder Management **Process groups:** Initiating, Planning, Monitoring and Controlling	Education Sector/Planning/Construction
Start date	**Finish date**
14 May 2018	15 January 2019

Project Objectives (general and specific)

General objective:
To develop a Project Management Plan for the Project Executing Unit of the Ministry of Education, Science and Culture, in accordance with the standards of the Project Management Institute, to manage the building of a training centre.

Specific objectives:

1. To create a project charter to formally authorize the project manager with the authority to apply resources to the project.
2. To construct a scope management plan to ensure that it includes all the work required to succesfully complete the project.
3. To construct a schedule management plan to support the development, monitoring and controling of the project schedule ensuring the project ends within the scheduled time frame.
4. To create a cost management plan to plan, structure and control the project budget ensuring the project is completed within the approved budget.
5. To create a risk management plan to identify the risks and ensure these are managed in an appropriate to minimize re-occurrence .
6. To develop a stakeholder engagement plan to identify strategies and actions on how to involve project stakeholders in decision making and execution.

Project purpose or justification (merit and expected results)

The purpose of this project is to develop a project management plan for the Project Executing Unit of the Ministry of Education, Science and Culture who is repsonsible for building a new training centre for teachers in Suriname. The project unit has already hired an engineering firm, N.V. SINTEC, who is resposible for preparing the designs and and tender documents for this activity. Teacher training is provided by the Center for Continuing Education in Suriname (CENASU). This center has no headquarters to carry out its daily operations and as a result lacks the adequate facilities to train teachers.

The development of a project management plan for the building of this new training center shall provide support to the Project

Executing Unit to effectively manage project activities during the planning, execution, monitoring and control and closing process by making use of best practices and various templates and plans. Proper planning is very important for the Project Executing Unit and therefore this project management plan will be a great help in the succesfull completion of the project. During this project, the project manager will develop the subsidiaries plan of the project management plan for building this new training centre.

Description of Product or Service to be generated by the Project – Project final deliverables

A Project Management Plan for building a Training Center for teachers will be developed by this project. This plan will consist of several subsidiary documents that are part of the project management plan.

Assumptions

It is assumed that the project can be completed within the curent scope and time
It is assumed that the executing unit will remain available to provide information
It is assumed that student will have enough time to work on gathering information
It is assumed that the student is in good health and working condition

Constraints

Time: the final graduation project must be in accordance with the timeframe for completion as set forth by the University.
Resources: only one person is involved in this project

Preliminary risks

1. If the schedule for completing the project is conflicting with the daily working schedule, the project management plan may not be finished on time.
2. If there are changes in the project teams, the gathering of information might take longer.

Budget

General costs will be spent on printing documents for analysis and if required, shipping costs will be involved when shipping to Costa Rica.

Milestones and dates

Milestone	Start date	End date
Project Start	14 May 2018	14 May 2018
Project Charter	14 May 2018	18 May 2018
WBS	14 May 2018	18 May 2018
Chapter I: Introduction Chapter	21 May 2018	25 May 2018
FGP Schedule	21 May 2018	25 May 2018
Chapter II: Theoretical Framework	28 May 2018	01 June 2018
Chapter III: Methodological Framework	04 June 2018	08 June 2018
Executive Summarry	11 June 2018	15 June 2018
Bibliography	11 June 2018	15 June 2018
Signed Charter	15 June 2018	15 June 2018
Tutoring	30 July 2018	21 November 2018
Chapter Adjustments	02 August 2018	13 August 2018
Chapter IV Development of Plan	14 August 2018	21 November 2018
- Charter	14 August 2018	23 August 2018
- Scope Management Plan	24 August 2018	05 September 2018
- Schedule Management Plan	06 September 2018	20 September 2018
- Cost Management Plan	21 September 2018	04 October 2018
- Risk Management Plan	05 October 2018	18 October 2018
- Stakeholder Management Plan	19 October 2018	29 October 2018
Chapter V: Conclusions	30 October 2018	01 November 2018
Chapter VI: Recommendations	02 November 2018	06 November 2018

Tutor Approval	07 November 2018	14 November 2018
FGP Submission to Reviewers	21 November 2018	21 November 2018
Review	28 November 2018	11 December 2018
Adjustments	12 December 2018	08 January 2019
Presentation to Board	9 January 2019	15 January 2019

Relevant historical information

The Ministry of Education, Science and Culture has a project executing unit who is resposible for the exection of projects on behalf of the Ministry. This unit is now responsible for executing the second phase of the Basic Education Improvement program (2nd BEIP) through a loan of USD 20.000.000,00 being financed by the Inter-American Development Bank. One of the activities under this loan is the building of a training centre for teachers.

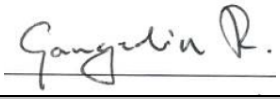
Stakeholders

Direct stakeholders:

- FGP Lecturer
- BEIP Project Executing Unit
- Inter-American Development Bank
- Ministry of Education Science and Culture
- Building Commission
- Infrastructure Assistant
- Tutor
- Engineering Firm
- Project Manager
- Jayant G

Indirect stakeholders:

- Colleagues from work
- Academic Assistant
- Project Team Leader
- Direct Supervisor at work
- Reviewers of the FGP
- Friends and Family of Raijant

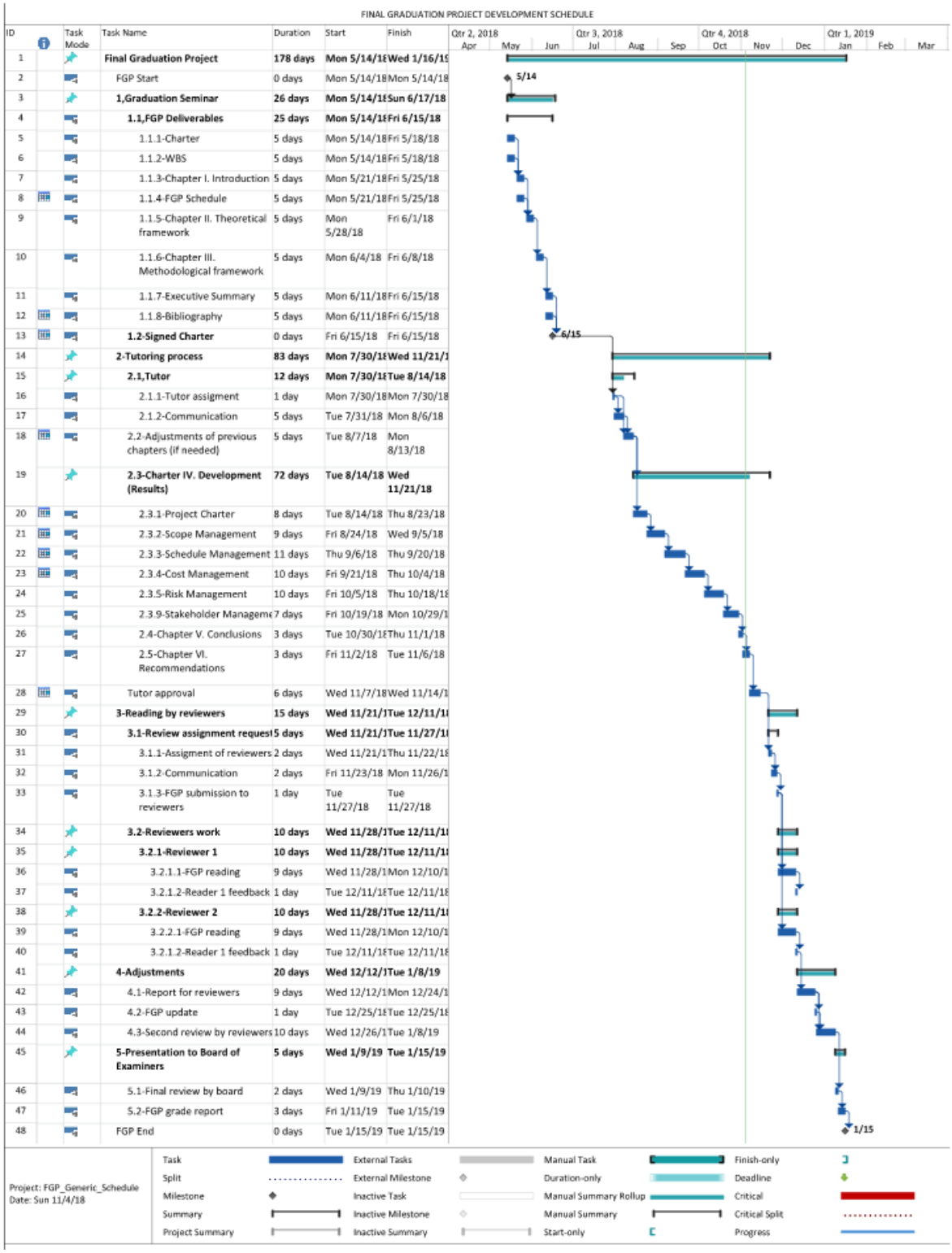
Project Manager: Raijant G	**Signature:** 
Authorized by: **Jayant G**	**Signature:**

Appendix 2: FGP WBS

Final Graduation Project Work Breakdown Structure

No.	Task
1	**Graduation Seminar**
1.1	Final Graduation Project Deliverables
1.1.1	FGP Charter
1.1.2	WBS
1.1.3	Introduction Chapter
1.1.4	FGP Schedule
1.1.5	Theoretical Framework
1.1.6	Methodological Framework
1.1.7	Executive Summary
1.1.8	Bibliography
1.2	Signed Charter
2	**Tutoring Process**
2.1	Tutor
2.1.1	Tutor Assignment
2.1.2	Communication
2.2	Adjustment of Chapters
2.3	Chapter IV Development
2.3.1	Project Charter
2.3.2	Scope Management
2.3.3	Schedule Management Plan
2.3.4	Cost Management Plan
2.3.5	Risk Management Plan
2.3.6	Stakeholder Management Plan
2.4	Chapter V. Conclusions
2.5	Chapter VI Recommendations
3	**Reading by Reviewers**
3.1	Review Request
3.1.1	Assignment of Reviewers
3.1.2	Communication
3.1.3	FGP submission to Reviewers
3.2	Reviewers Work
3.2.1	Reviewer 1
3.2.1.1	FGP reading
3.2.1.2	Reader 1 feedback
3.2.2	Reviewer 2
3.2.2.1	FGP reading
3.2.2.2	Reader 2 feedback
4	**Adjustments**
4.1	Report for reviewers
4.2	FGP update
4.3	Second Review by reviewers
5	**Presentation to Board of Examiners**
5.1	Final review by board
5.2	FGP Grade report

Appendix 3: FGP Schedule



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Final Graduation Project**	**178 days**	**Mon 5/14/18**	**Wed 1/16/19**
2		FGP Start	0 days	Mon 5/14/18	Mon 5/14/18
3		**1,Graduation Seminar**	**26 days**	**Mon 5/14/18**	**Sun 6/17/18**
4		**1.1,FGP Deliverables**	**25 days**	**Mon 5/14/18**	**Fri 6/15/18**
5		1.1.1-Charter	5 days	Mon 5/14/18	Fri 5/18/18
6		1.1.2-WBS	5 days	Mon 5/14/18	Fri 5/18/18
7		1.1.3-Chapter I. Introduction	5 days	Mon 5/21/18	Fri 5/25/18
8		1.1.4-FGP Schedule	5 days	Mon 5/21/18	Fri 5/25/18
9		1.1.5-Chapter II. Theoretical framework	5 days	Mon 5/28/18	Fri 6/1/18
10		1.1.6-Chapter III. Methodological framework	5 days	Mon 6/4/18	Fri 6/8/18
11		1.1.7-Executive Summary	5 days	Mon 6/11/18	Fri 6/15/18
12		1.1.8-Bibliography	5 days	Mon 6/11/18	Fri 6/15/18
13		**1.2-Signed Charter**	0 days	Fri 6/15/18	Fri 6/15/18
14		**2-Tutoring process**	**83 days**	**Mon 7/30/18**	**Wed 11/21/1**
15		**2.1,Tutor**	**12 days**	**Mon 7/30/18**	**Tue 8/14/18**
16		2.1.1-Tutor assigment	1 day	Mon 7/30/18	Mon 7/30/18
17		2.1.2-Communication	5 days	Tue 7/31/18	Mon 8/6/18
18		2.2-Adjustments of previous chapters (if needed)	5 days	Tue 8/7/18	Mon 8/13/18
19		**2.3-Charter IV. Development (Results)**	**72 days**	**Tue 8/14/18**	**Wed 11/21/18**
20		2.3.1-Project Charter	8 days	Tue 8/14/18	Thu 8/23/18
21		2.3.2-Scope Management	9 days	Fri 8/24/18	Wed 9/5/18
22		2.3.3-Schedule Management	11 days	Thu 9/6/18	Thu 9/20/18
23		2.3.4-Cost Management	10 days	Fri 9/21/18	Thu 10/4/18
24		2.3.5-Risk Management	10 days	Fri 10/5/18	Thu 10/18/18
25		2.3.9-Stakeholder Manageme	7 days	Fri 10/19/18	Mon 10/29/1
26		2.4-Chapter V. Conclusions	3 days	Tue 10/30/18	Thu 11/1/18
27		2.5-Chapter VI. Recommendations	3 days	Fri 11/2/18	Tue 11/6/18
28		Tutor approval	6 days	Wed 11/7/18	Wed 11/14/1
29		**3-Reading by reviewers**	**15 days**	**Wed 11/21/1**	**Tue 12/11/1**
30		**3.1-Review assignment reques**	**5 days**	**Wed 11/21/1**	**Tue 11/27/1**
31		3.1.1-Assigment of reviewers	2 days	Wed 11/21/1	Thu 11/22/18
32		3.1.2-Communication	2 days	Fri 11/23/18	Mon 11/26/1
33		3.1.3-FGP submission to reviewers	1 day	Tue 11/27/18	Tue 11/27/18
34		**3.2-Reviewers work**	**10 days**	**Wed 11/28/1**	**Tue 12/11/1**
35		**3.2.1-Reviewer 1**	**10 days**	**Wed 11/28/1**	**Tue 12/11/1**
36		3.2.1.1-FGP reading	9 days	Wed 11/28/1	Mon 12/10/1
37		3.2.1.2-Reader 1 feedback	1 day	Tue 12/11/18	Tue 12/11/18
38		**3.2.2-Reviewer 2**	**10 days**	**Wed 11/28/1**	**Tue 12/11/1**
39		3.2.2.1-FGP reading	9 days	Wed 11/28/1	Mon 12/10/1
40		3.2.1.2-Reader 1 feedback	1 day	Tue 12/11/18	Tue 12/11/18
41		**4-Adjustments**	**20 days**	**Wed 12/12/1**	**Tue 1/8/19**
42		4.1-Report for reviewers	9 days	Wed 12/12/1	Mon 12/24/1
43		4.2-FGP update	1 day	Tue 12/25/18	Tue 12/25/18
44		4.3-Second review by reviewers	10 days	Wed 12/26/1	Tue 1/8/19
45		**5-Presentation to Board of Examiners**	**5 days**	**Wed 1/9/19**	**Tue 1/15/19**
46		5.1-Final review by board	2 days	Wed 1/9/19	Thu 1/10/19
47		5.2-FGP grade report	3 days	Fri 1/11/19	Tue 1/15/19
48		FGP End	0 days	Tue 1/15/19	Tue 1/15/19

Appendix 4: Project Charter Template

PROJECT CHARTER TEMPLATE
<PROJECT NAME>

COMPANY NAME
STREET ADDRESS
CITY, STATE ZIP CODE

DATE

TABLE OF CONTENTS

Executive Summary

The executive summary should be a high-level summary of what issues or problems the project was created to correct. Typically, the executive summary also provides the background information and general statements regarding the project's purpose or justification which will be covered in more detail in the appropriate section(s) of the charter.

Project Purpose/Justification

This section describes the purpose and justification of the project in the form of business case and objectives. The business case should provide the reasoning behind the need for this project as it relates to a function of the business.

Business Need/Case

Discuss the logic for the Business Need/Case (market demand, organizational need, customer request, technological advance, legal requirement, ecological impacts, social need, etc). This section should also include the intended effects of the business case (i.e. cost savings, process improvement, new product development, etc).

Business Objectives

This section should list the Business Objectives for the project which should support the organizational strategic plan.

Project Description

This section provides a high-level description of the project. This description should not contain too much detail but should provide general information about what the project is, how it will be done, and what it is intended to accomplish. As the project moves forward the details will be developed, but for the project charter, high-level information is what should be provided.

Project Objectives and Success Criteria

Objectives should be SMART: Specific, Measurable, Attainable, Realistic, and Time-bound. The project manager must be able to track these objectives in order to determine if the project is on the path to success. Vague, confusing, and unrealistic objectives make it difficult to measure progress and success.

Requirements

The project team should develop a list of all high-level project requirements. These requirements are clear guidelines within which the project must conform and may be a result of input from the project sponsor, customer, stakeholders, or the project team.

Constraints

Constraints are restrictions or limitations that the project manager must deal with pertaining to people, money, time, or equipment. It is the project manager's role to balance these constraints with available resources in order to ensure project success.

Assumptions

The project team must identify the assumptions they will be working under as the project goes forward. These assumptions are what the project manager/team expect to have or be made available without anyone specifically stating so.

Preliminary Scope Statement

The preliminary scope statement is a general paragraph which highlights what the project will include, any high-level resource or requirement descriptions, and what will constitute completion of the project. This preliminary scope statement is exactly that: preliminary. All of this information will be expanded upon in greater detail as the project moves forward and undergoes progressive elaboration.

Risks

All projects have some form of risk attached. This section should provide a list of high-level risks that the project team has determined apply to this project.

Project Deliverables

This section should list all of the deliverables that the customer, project sponsor, or stakeholders require upon the successful completion of the project. Every effort must be made to ensure this list includes all deliverables and project sponsor approval must be required for adding additional deliverables in order to avoid scope creep.

Summary Milestone Schedule

This section provides an estimated schedule of all high-level project milestones. It is understood that this is an estimate and will surely change as the project moves forward and the tasks and milestones and their associated requirements are more clearly defined.

Summary Budget

The summary budget should contain general cost components and their planned costs. As the project moves forward these costs may change as all tasks and requirements become clearer. Any changes must be communicated by the project manager.

Project Approval Requirements

The organization must understand when the project has reached a successful completion. These criteria must be clear and should be accepted by whoever will sign-off on the project's closeout. Once signed-off by the authorized person, the project is deemed approved and is successful as long as it has met all of the agreed upon requirements.

Project Manager

This section explicitly states who is assigned as the PM, their responsibility, and authority level. Depending on the organization and scope of the project, the project manager may have varying levels of responsibility and authority for personnel, project expenditures, and scheduling.

Authorization

This section provides the names and authorization, once signed, for the project to move forward in accordance with the information contained in this charter.

Authorization

Approved by:

Date: _____

The Minister of Education Science and Culture

Client

Figure 18 Project Charter Template. Retrieved September 16, 2018 from https://www.projectmanagementdocs.com/template/project-initiation/project-charter-multi-page-version/

Appendix 5: Project Scope Management Plan Template

SCOPE MANAGEMENT PLAN TEMPLATE

SCOPE MANAGEMENT PLAN
<PROJECT NAME>

COMPANY NAME
STREET ADDRESS
CITY, STATE ZIP CODE

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Introduction

Scope Management is the collection of processes which ensure that the project includes all the work required to complete it while excluding all work which is not necessary to complete it. The Scope Management Plan details how the project scope will be defined, developed, and verified. It clearly defines who is responsible for managing the projects' scope and acts as a guide for managing and controlling the scope.

Project Scope Management follows a five-step process; Collect Requirements, Define Scope, Create WBS, Verify Scope, and Control Scope.

1) *Collect Requirements – this first step is the process by which we define and document the requirements needed to meet all project objectives. The foundation of this process is the project charter and stakeholder register. From these, the team can identify requirements, collectively discuss details associated with meeting each requirement, conduct interviews and follow-on discussion to clarify the requirements, and document the requirements in sufficient detail to measure them once the project begins the execution phase. This documentation also serves as an input to the next step in the process which is to define scope.*
2) *Define Scope – this step is critical to project success as it requires the development of a detailed project/product description to include deliverables, assumptions, and constraints and establishes the framework within which project work must be performed.*
3) *Create WBS – this process breaks project deliverables down into progressively smaller and more manageable components which, at the lowest level, are called work packages. This hierarchical structure allows for more simplicity in scheduling, costing, monitoring, and controlling the project.*
4) *Verify Scope – this is the process by which the project team receives a formalized acceptance of all deliverables with the sponsor and/or customer.*
5) *Control Scope – this is the process of monitoring/controlling the project/product scope as well as managing any changes in the scope baseline. Changes may be necessary to the project scope but it is imperative they are controlled and integrated in order to prevent scope creep.*

Scope Management Approach

It is important that the approach to managing the projects' scope be clearly defined and documented in detail. This section provides a summary of the Scope Management Plan in which it addresses the following:

- *Who has authority and responsibility for scope management*
- *How the scope is defined (i.e. Scope Statement, WBS, WBS Dictionary, Statement of Work, etc.)*
- *How the scope is measured and verified (i.e. Quality Checklists, Scope Baseline, Work Performance Measurements, etc.)*
- *The scope change process (who initiates, who authorizes, etc.)*
- *Who is responsible for accepting the final project deliverable and approves acceptance of project scope*

Roles and Responsibilities

In order to successfully manage a projects' scope it's important that all roles and responsibilities for scope management are clearly defined. This section defines the role of the Project Manager, Project Team, Stakeholders and other key persons who are involved in managing the scope of the project. It should state who is responsible for scope management and who is responsible for accepting the deliverables of the project as defined by the projects' scope. Any other roles in scope management should also be stated in this section.

Name	Role	Responsibilities
		-
		-
		-
		-
		-

Table 1.1, *Scope Management Roles and Responsibilities*

Scope Definition

The scope definition section details the process of developing a detailed description of the project and its deliverables. This can only be completed after the requirements have been identified and defined during the requirements definition process. During the requirements definition process three documents were created; Requirements Documentation, Requirements Management Plan and a Requirements Traceability Matrix. You can refer to these documents when defining the projects' scope.

This section should explain the process you followed to develop the detailed description of the project and its deliverables. If you used other documents such as the Project Charter, Preliminary Project Scope Statement or Requirements Documentation you should identify them and all other documents used. You should tie the scope definition process back to the requirements definition as the projects' scope answers the requirements for the project.

You should also document the tools and techniques used to define the project scope such as expert judgment, product analysis, alternatives identification or facilitated workshops.

Project Scope Statement

The project scope statement details the project's deliverables and the work necessary to create these deliverables. The Project Scope Statement should contain the following components:

- *Product Scope Description – describes what the project will accomplish*
- *Product Acceptance Criteria – describes what requirements must be met in order for the project to be accepted as complete*
- *Project Deliverables – detailed list of deliverables the project will result in*
- *Project Exclusions – description of work that is not included in the project and outside of the scope*
- *Project Constraints – lists limits on resources for time, money, manpower, or equipment (capital)*
- *Project Assumptions – describes the list of assumptions the project team and stakeholders are working under to complete the project*

Work Breakdown Structure

The Work Breakdown Structure (WBS) and Work Breakdown Structure Dictionary are key elements to effective scope management. This section should discuss how the project scope is to be subdivided into smaller deliverables in the WBS and WBS Dictionary and how these smaller components are managed during the life of the project.

Example:

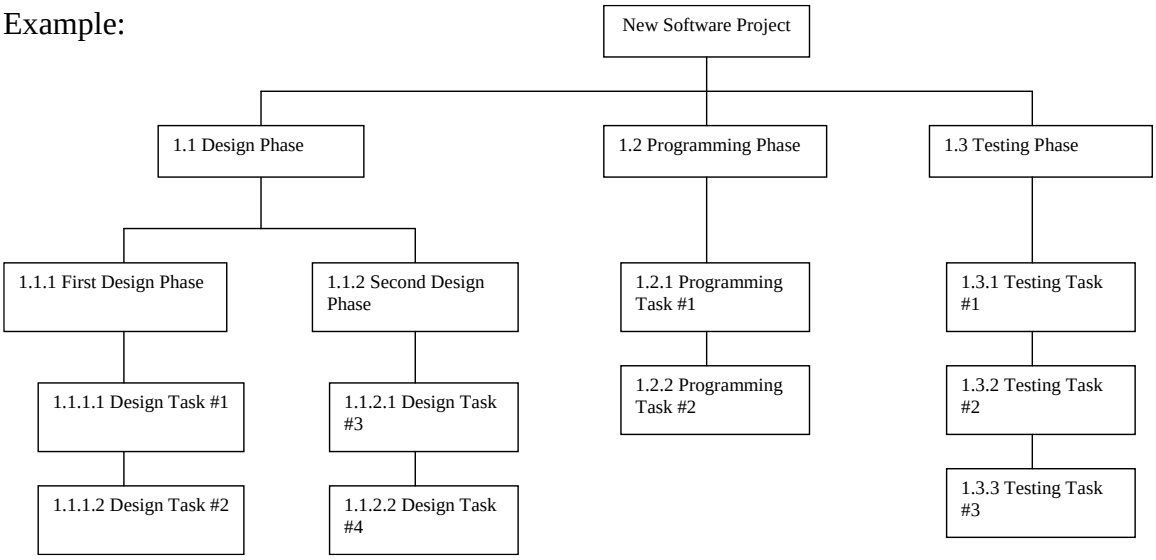

Figure 1.1, *Work Breakdown Structure (WBS)*

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget	Resources

Table 1.2, *WBS Dictionary*

Scope Verification

Scope verification discusses how the deliverables will be verified against the original scope and how the deliverables from the project will be formally accepted. The deliverables for the project should be formally accepted and signed off on by the customer throughout the lifecycle of the project and not held back as a single deliverable at the end of the project.

Scope Control

Scope control is the process of monitoring the status of the scope of the project. This section also details the change process for making changes to the scope baseline.

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Approved by the Project Sponsor:

_____ Date: _____

<Inter-American Development Bank>
<Project Team leader>

Figure 19 Scope Management Plan Template. Retrieved September 16, 2018 from https://www.projectmanagementdocs.com/template/project-planning/scope-management-plan/

Appendix 6: Project Schedule Management Plan Template

PROJECT SCHEDULE MANAGEMENT PLAN TEMPLATE

SCHEDULE MANAGEMENT PLAN
<PROJECT NAME>

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This section highlights the purpose and importance of the schedule management plan. It provides a general description of what should be included in the schedule management plan. These items will be described in more detail later in the plan under each corresponding section.

Schedule Management Approach

This section provides a general framework for the approach which will be taken to create the project schedule. This includes the scheduling tool/format, schedule milestones, and schedule development roles and responsibilities.

Schedule Control

This section defines how the project's schedule will be controlled throughout the life of the project. This includes the frequency of updates and schedule reviews as well as communicating the schedule and progress. This section also defines roles and responsibilities as they relate specifically to project schedule control.

Schedule Changes and Thresholds

As the project schedule is created it is important that boundary conditions are set by the project sponsor to establish the schedule parameters within which the project is expected to operate. Any event which may potentially cause a schedule change which exceeds these boundary conditions must have a schedule change request submitted and approved by the sponsor before the schedule change is made. For this example, we will use a change threshold of 10%.

Scope Change

Occasionally, approved changes to the project's scope may result in the schedule needing to be re-baselined. These scope changes may include new deliverables or requirements that were not previously considered as part of the original schedule's development. In these situations, the project manager and team must consider the current status of the project schedule and how the scope change will affect the schedule and its resources as the project moves forward.

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Approved by the Project Sponsor:

_____ Date: _____

<Inter-American Development Bank>
<Project Team leader>

Figure 20 Schedule Management Plan Template. Retrieved September 16, 2018 from https://www.projectmanagementdocs.com/template/project-planning/schedule-management-plan/

Appendix 7: Project Cost Management Plan Template

PROJECT COST MANAGEMENT PLAN TEMPLATE

COST MANAGEMENT PLAN
<PROJECT NAME>

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The Cost Management Plan clearly defines how the costs on a project will be managed throughout the project's lifecycle. It sets the format and standards by which the project costs are measured, reported and controlled. The Cost Management Plan:

- *Identifies who is responsible for managing costs*
- *Identifies who has the authority to approve changes to the project or its budget*
- *How cost performance is quantitatively measured and reported upon*
- *Report formats, frequency and to whom they are presented*

Cost Management Approach

This section you explain your approach to cost management for your project.

We chose to create Cost Accounts at the fourth level of the WBS as an example since many project management offices don't have a Project Management Information System. If you are using a Project Management Information System then you can, and should, manage costs down to the work package level. For those who don't have a Project Management Information System you'll want to determine which level of the WBS you can most effectively manage the project's costs from. The further down in the WBS you go, the more detailed your cost management is. However, you should balance the granularity at which you want to manage costs against the amount of effort it takes to manage at that level. The more granular your cost management, the more work is necessary to manage it.

Measuring Project Costs

This section defines how the project's costs will be measured. The PMBOK focuses on Earned Value Management for measuring and controlling a project's costs. Earned Value Management is a broad and powerful tool; as such, we recommend that all project managers take some formal courses in Earned Value Management.

In this section you should detail how you will measure the project costs. What Earned Value measurements will be captured and reported upon. Will you use any tools, such as project management software, to assist in capturing Earned Value metrics? How will you forecast future project costs? Will you review cost performance over time, across work packages or schedule activities?

Our example in this section measures four Earned Value measurements; Schedule Variance (SV), Cost Variance (CV), Schedule Performance Index (SPI) and Cost Performance Index (CPI). For most typical projects these four measurements can provide enough insight for effective management without overburdening the Project Manager with Earned Value calculations and measurements.

Schedule Variance (SV) is a measurement of the schedule performance for a project. It's calculated by taking the Earned Value (EV) and subtracting the Planned Value (PV). Since EV is the actual value earned in the project and the PV is the value our project plan says we should have earned at this point, when we subtract what we planned from the actual we have a good measurement which tells us if we are ahead or behind the baseline schedule according to our project plan. If SV is zero, then the project is perfectly on schedule. If SV is greater than zero,

the project is earning more value than planned thus it's ahead of schedule. If SV is less than zero, the project is earning less value than planned thus it's behind schedule.

Cost Variance (CV) is a measurement of the budget performance for a project. CV is calculated by subtracting Actual Costs (AC) from Earned Value (EV). As we already know, EV is the actual value earned in the project. AC is the actual costs incurred to date, thus when we subtract what our actual costs from the EV we have a good measurement which tells us if we are above or below budget. If CV is zero, then the project is perfectly on budget. If CV is greater than zero, the project is earning more value than planned thus it's under budget. If CV is less than zero, the project is earning less value than planned thus it's over budget.

Schedule Performance Index (SPI) measures the progress achieved against that which was planned. SPI is calculated as EV/PV. If EV is equal to PV the value of the SPI is 1. If EV is less than the PV then the value is less than 1, which means the project is behind schedule. If EV is greater than the PV the value of the SPI is greater than one, which means the project is ahead of schedule. A well performing project should have its SPI as close to 1 as possible, or maybe even a little under 1.

Cost Performance Index (CPI) measures the value of the work completed compared to the actual cost of the work completed. CPI is calculated as EV/AC. If CPI is equal to 1 the project is perfectly on budget. If the CPI is greater than 1 the project is under budget, if it's less than 1 the project is over budget.

Reporting Format

Cost Variance Response Process

This section of the Cost Management Plan defines the control thresholds for the project and what actions will be taken if the project triggers a control threshold. As a part of the response process the Project Manager typically presents options for corrective action to the Project Sponsor who will then approve an appropriate action in order to bring the project back on budget. The Project Manager may propose to increase the budget for the project, reduce scope or quality, or some other corrective action.

Cost Change Control Process

Typically, the change control process follows the project change control process. If there are special requirements for the cost change control process, they should be detailed in this section.

Project Budget

The budget for this project is detailed below. Costs for this project are presented in various categories...

Fixed Costs:	*$xxx,xxx.xx*
Material Costs	*$xxx,xxx.xx*
Contractor Costs	*$xxx,xxx.xx*
Total Project Cost	*$xxx,xxx.xx*

Management Reserve $x,xxx.xx

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Approved by the Project Sponsor:

_____ Date: _____

<Inter-American Development Bank>
<Project Team leader>

Figure 21 Cost Management Plan Template. Retrieved September 16, 2018 from https://www.projectmanagementdocs.com/template/project-planning/cost-management-plan/

Appendix 8: Project Risk Management Plan Template

PROJECT RISK MANAGEMENT PLAN TEMPLATE

RISK MANAGEMENT PLAN
<PROJECT NAME>

COMPANY NAME
STREET ADDRESS
CITY, STATE ZIP CODE

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Introduction
This section explains why risks exist and highlights the purpose and importance of the risk management plan. It provides a general description of why risk management is essential to effectively managing a project and describes what is needed before risk management can begin.

Top Three Risks
It is important to explicitly state the top three risks to the project in the Risk Management Plan. This will make management aware of the top risks for the project and the nature of the risks.

Risk Management Approach
This section provides a general description for the approach taken to identify and manage the risks associated with the project. It should be a short paragraph or two summarizing the approach to risk management on this project.

Risk Identification
This section explains the process by which the risks associated with this project were identified. It should describe the method(s) for how the project team identified risks, the format in which risks are recorded, and the forum in which this process was conducted. Typical methods of identifying risks are expert interview, review historical information from similar projects and conducting a risk assessment meeting with the project team and key stakeholders.

Expert Interview

Risk Assessment Meeting
.

Historical Review of Similar Projects

Risk Qualification and Prioritization

Once risks are identified it is important to determine the probability and impact of each risk in order to allow the project manager to prioritize the risk avoidance and mitigation strategy. Risks which are more likely to occur and have a significant impact on the project will be the highest priority risks while those which are more unlikely or have a low impact will be a much lower priority. This is usually done with a probability – impact matrix. This section explains risks were qualified and prioritized for this project

Risk Monitoring
This section should discuss how the risks in the project will be actively monitored. One effective way to monitor project risks is to add those risks with the highest scores to the project schedule with an assigned risk manager. This allows the project manager to see when these risks need to be monitored more closely and when to expect the risk manager to provide status updates at the bi-weekly project team meetings. The key to risk monitoring

is to ensure that it is continuous throughout the life of the project and includes the identification of trigger conditions for each risk and thorough documentation of the process.

Risk Mitigation and Avoidance

Once risks have been qualified, the team must determine how to address those risks which have the greatest potential probability and impact on the project. This section explains the considerations which must be made and the options available to the project manager in managing these risks.

RISK REGISTER

Every project must maintain a risk register in order to track risks and associated mitigation strategies. This section describes the risk register criteria as well as where the risk register is maintained and how these risks are tracked in the project schedule.

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Approved by the Project Sponsor:

_____ Date: _____

<Inter-American Development Bank>
<Project Team leader>

Figure 22 Risk Management Plan Template. Retrieved September 16, 2018 from https://www.projectmanagementdocs.com/template/project-planning/risk-management-plan/

Appendix 9: Stakeholder Engagement Plan Template

Chart 31 Stakeholder Engagement Plan Template (Source: created by author, 2018)

Stakeholder	Potential role in the activity	Engagement Strategy	Follow-up strategy

Appendix 10: Acceptance Criteria Form

Chart 32 Acceptance Criteria Form (Source: created by author, 2018)

Project Acceptance Form	
Issued by:	Date:
Project Name:	Project Description:
Project Acceptance Criteria:	Results Summary:
Project Manager	
Name:	
Action:	
Comments:	
Signature:	Date:
Project Sponsor	
Name Project Sponsor:	
Action:	
Comments:	
Signature:	Date:

Appendix 11: Revision Dictum

15 November 2018

University for International Cooperation
With respect to Mr. Carlos Brenes
15th Avenue, 35th Street,
Barrio Escalante,
San José 10101, Costa Rica

Philological approval letter of thesis written by Mr. Raijant Amarnath Gangadin

Dear Mr. Brenes,

I, Mr. Vishal Kasiram, hereby declare that the thesis entitled

"PROJECT MANAGEMENT PLAN FOR THE BUILDING OF A TRAINING CENTER FOR TEACHERS IN PARAMARIBO, SURINAME"

has been reviewed and corrected thoroughly and meets to requirements corresponding to a master's level dissertation.

Yours sincerely,

Kasiram

Mr. Vishal Kasiram, B. Ed. in English

diploma

De examen-commissie verklaart dat

Kasiram, Vishal R.

geboren te Paramaribo de 30 nov. 1981

met goed gevolg heeft afgelegd het examen ter verkrijging van de

MO - A - akte Engels

Paramaribo, 21 aug. 2007

De examen-commissie voornoemd,

DIRECTEUR

VOORZITTER

DE GEEXAMINEERDE

SECRETARIS

PLAKZEGEL SURINAME

Het examen is afgenomen overeenkomstig de Bepalingen van de Ministeriële Onderwijs en Volksontwikkeling van 15 november 1971 G.B.172

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VOOR DE OPLEIDING
VAN LERAREN