ADDIS ABABA UNIVERSITY

SCHOOL OF COMMERCE

Assessment of Project Management Maturity: A case study at Homa Construction PLC

By: Eyerusalem Moges

Advisor: Teklegiorgis Assefa (Asst. Prof.)

June, 2018

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A project work Submitted to Addis Ababa University School of Commerce in Partial Fulfilment of the Requirements for the Degree of Master of Arts in project Management

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Approved by Board of Examiners

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Advisor	signature
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Examiner	Signature
_____	_____
Examiner	Signature

DECLARATION

I hereby declare that this submission is my own work and contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

_____ _____ _____

Candidate's Name Signature Date

Advisor's Approval

This project work has been submitted for examination with my approval as a University advisor.

_____ _____ _____

Advisor's Name Signature Date

STATEMENT OF CERTIFICATION

This is to certify that the project work entitled “Assessment of Project management maturity: A case study at Homa construction PLC” submitted by Eyerusalem Moges to Addis Ababa University School Commerce towards partial fulfilment of the requirements for the award of the degree of Master of Arts in project Management is a genuine record of the work carried out by her under my supervision and guidance.

Teklegiorgis Assefa (Asst. Prof.)

_____ _____

Signature Date

ACKONWLGEMENT

First and foremost my special thanks go to the Almighty God for his presence, guidance and blessing in all aspects of my life.

My warmest gratitude and appreciation is also for my advisor Teklegiorgis Assefa (Asst. Prof.) for his unreserved professional and technical assistance. Indeed without his support successful completion of this study would have been difficult.

The last but not the least I would like to thank Homa construction PLC's staffs and managements for their hospitality, cooperation and for the positive responses I received in the processes conducting this research work.

Eyerusalem Moges
June, 2018

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ACRONYMS

APM- Association for Project Management

CMMI- Capability Maturity Model Integration

HRM- Human Resource Management

IMSI - Integrated Management System Incorporated

IPMA - International Project Management Association

K-PMMM- Project Management Process Maturity Model

OPM3 - Organizational Project Management Maturity Model

PM- Project Management

PMBOK -Project Management Body of Knowledge

PMI -Project Management Institute

PMMM -Project Management Maturity Model

WBS – Work Breakdown Structure

Abstract

This paper was conducted to assess project management maturity levels of Homa construction PLC with specific of objective of measuring and identifying actual practice of the company on managing various projects. The scope of the study was limited to projects takes place in Homa construction PLC. Descriptive research was used as a research design which was a framework for collection and analysis of data. Primary and secondary method of data collection used to collect data from six respondents and detailed literatures respectively. Semi structured questionnaires and interview used as a method to collect primary data and it were analyzed quantitatively through five-levels of maturity and scoring mean to assess maturity of the company in managing projects in eight knowledge areas. The data collected through interview were analyzed qualitatively to describe the current project management practice of the company. According the assessment made the company currently running on level 3 project management maturity. This presents Project management processes are well established and exist at organizational level. Management and technical processes are documented, standardized and integrated into some extent with other business processes. But this assessment also present that organization does not have fully integrated, quantitatively analyzed, measured ,stored and continually improved project management data and processes for all project management knowledge areas and sub elements. Since higher level of project management maturity ensures effective projects delivery and has a direct impact on project efficiency this study also recommend some points on observed gaps by referring literatures in each project management knowledge areas.

***Key Words**: Project management Knowledge area, project maturity assessment model, project maturity level*

Chapter one

1 Introduction

1.1 Background of the study

According to the Project Management Body of Knowledge (PMI, 2013), project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. Project Management can be described as general purpose management tool that can bring projects to successful completion and to the satisfaction of the project stakeholders, given the traditional constraints of defined scope, desired quality, budgeted cost, and a schedule deadline..

The benefits derived from project management increase in proportion to how well project management Processes are used. A well-executed project will be completed on time, within its approved budget. A well executed project will deliver higher product quality by managing the time to design and test the new product. It will provide great satisfaction to its team, and it will meet (or exceed) the customers' expectations.

Maturity in project management is the development of systems and processes that are repetitive in nature and provide a high probability that each project will be a success. The term project maturity is the state where the project is in a perfect situation to achieve its objectives and it mean that the company is perfectly conditioned to deal with its project. Project management maturity is a collection of the maturity of nine project knowledge areas which are project integration management, Project scope management, Project time management, Project cost management, Project quality management, Project human resource management, Project communications management, Project risk management and Project procurement management.

Since there is direct relationship between project management maturity and project performance, assessing Project management maturity provides a framework which enable firms to achieve excellence in project management and on project performance. In

addition making this assessment provide the company a clear picture of the current state and identify gaps in project management practice, and provide a road map for improvement action.

Project Management Maturity models are just one such means that can be used in pursuit of improving Project Management Maturity (Cleland & Ireland, 2002). The use of maturity models provides a frame work for purposeful and progressive development of project management capability of repeatedly delivering successful projects. There are different models available for measuring the project management maturity but most of them are common on their maturity levels and on the characteristic that uses for each level. Because of the availability of literatures for the assessment of eight project management knowledge areas IMSI Project Management Assessment Model were selected for the purpose of this project work.

1.2 Background of the company

HOMA Construction Plc is ISO certified Grade-1 General Construction Company which is established as a sole proprietor in 1982 EC owned and managed by Ato Adugna Ejigu. The company has its own office in Addis Ababa Bole Sub-City keble 06 house No 295. Since its establishment the construction company has under taken and executed various projects of diverse natures, among this to list down projects undertaken by the company on the last five years

- Federal High Court and Justice Office Building
- CBE Shashemen District Office Building
- Ataye River Bridge 50 Meter Span And Its5 KM Approaching Road
- 37 Mt Span Chiriti River Bridge and approaching Road 4.5 KM
- Mille River Bridge and its Approach Road
- Klinto Concrete Asphalt Road Project 12.6 KM
- CBE Nekemte District Office Building
- AIB Nekemte District Building

The company head office companyal structure is as follow,

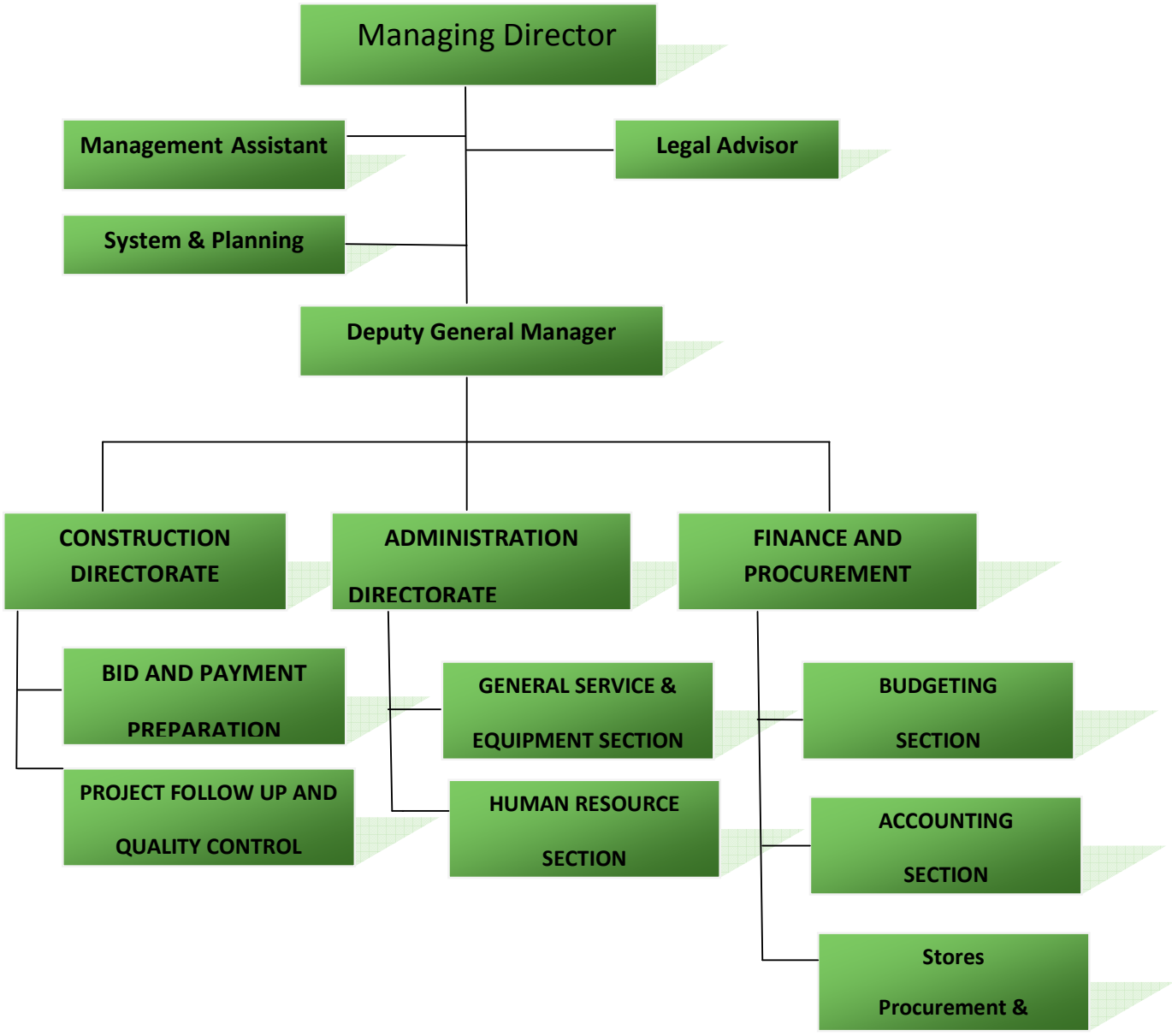

Figure 1.1 Homa construction PLC companyal structure

1.3 Statement of the problem

Since Homa construction PLC is project oriented company it goes through a lot of project management processes which is a significant element for the successes of each projects held by the company. Mismanagements of this project management body of knowledge will affect the successes of each projects as well as the company performance a lot since the projects held by the company are highly budgeted and technical which needs proper project management. According the visit and the information collected from Homa construction PLC no assessment has been made on the company regarding this issue which means that the company lack sufficient information on how mature its project management practices are and how to reach a higher project management maturity level for efficient project delivery. By observing this gaps this project work tried to assess the project management maturity level of Homa construction PLC. Therefore making this assessment help the company to know how mature the project management practices are and to make improvement on its project management practices to reach a higher level of maturity, since higher level of project management maturity ensures efficient projects delivery (Grant and Pennypacker, 2006).

1.4 Research Question

This study will try to answer the following research questions

Main Research question

- What is project management maturity level of Homa constriction PLC for the various projects undertaken in the company?

Sub research question

- What are the project management practices of the company on managing various projects?

1.5 Objective of the Study

This study will try to assess the project management maturity of Homa construction PLC in each knowledge areas and the actual project management practice of the company in managing various projects as described in the following general and specific objective.

1.5.1 General Objective

Assess the project management maturity level of Homa construction PLC in managing various projects.

1.5.2 Specific Objective

- Assess the project management practices of the company on managing various projects.

1.6 Significance of the study

As stated on the introduction project management maturity provides a path and framework which enable firms to achieve excellence in project management and on project performance (Mateen, 2015). Measure of project management maturity enables the company to identify how to improve project performance and how to deliver project with effectiveness and efficiency (Albrecht and Spang, 2014).

The maturity assessment result of this research can be used as initial benchmark information in prioritizing and designing improvement action in each project management knowledge areas of the company. Further the same result can also be used as a baseline to compare the success or impact of future improvement efforts. In addition, the proposed model can serve as a guide line in implementing the best practice of project management and in designing improvement effort. Therefore conducting this study help the selected organization to identify the current ways of managing it is projects (its levels of maturity) regarding on each project management knowledge areas and help the organization to compare its level of maturity with standard best practices for better project performance.

1.7 Scope and limitation of the study

The scope of this study is limited on projects implemented on Homa construction plc. The limitation expected through the study beside the shortage of time available for the study is limited accessibility of the project staff because of their busy schedule and the result of the study is dependent of the project staffs knowledge and understanding of the subject area of the research.

1.8 Organization of the Research Report

The study consists of five chapters as described below:

- Chapter one is an introductory part containing discussions on background of the study, company, research problems, objective of the study, significance of the research, delimitation and limitation of the research and organization of the research report.

- Chapter two briefly discussed literature relevant to the study which includes theory and empirical evidence related to the research topic.
- Chapter three discussed about the research design and methodology which was applied in the study.
- Chapter four presents results/findings of the study and interprets the findings.
- Chapter five is all about the summary of the findings, conclusions and recommendations.

Chapter Two

2 Literature review

2.1 PROJECT Definition

The Project Management Institute (PMI) defines project as “a temporary endeavour undertaken to produce a unique product, service, or result” (PMI, 2013). This means that a project is done only once. If it becomes repetitive, it becomes operation (a routine activity). A project have definite starting and ending dates, and budget, a clearly defined scope of work to be done, as well as specific performance requirements that must be met.

APM Body of Knowledge (2012) defines project as: “Project is a unique, transient endeavour undertaken to achieve planned objectives, which could be defined in terms of outputs, outcomes or benefits”

“A temporary endeavour (that has definite beginning and end time)undertaken following specific cycle of Initiation, Definition, Planning, Execution and Close to create a unique product, service, or result through novel organization and coordination of human, material and financial resources” (PMI, 2004).

“A project has a defined scope, is constrained by limited resource, involves many people with different skill and, usually progressively elaborated throughout its life cycle” (Cleland & Ireland, 2002)

2.2 PROJECT MANGEMENT Definition

APM Body of Knowledge (2012) defines project management as:

“Project management is the application of processes, methods, knowledge, skills and experience to achieve the project objectives.”

PMBOK (2013) defines project management as:

“Project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements.

Project Management can be described as a general purpose management tool that can bring projects to successful completion and to the satisfaction of the project stakeholders, given the traditional constraints of defined scope, desired quality, budgeted cost, and a schedule deadline. Project management deals mainly with coordinating resources and managing people and changes. Generally "Managing a project includes: Identifying requirements, Establishing clear and achievable objectives, Balancing the competing demands for quality, scope, time and cost; Adapting specifications, plans, and approach to the different concerns and expectations of the various stakeholders" ((PMI, 20013).

2.3 PROJECT Maturity: Concept and Definition

According to (Cooke-Davies, 2005)**,** there is neither a common understanding nor definition of the concept of maturity or the route to gain in maturity in most of PM maturity models. Thus, an analogy of maturity in a practice of profession is used here to get better understanding of the concept. Maturity in practice of a profession is generally developed in two dimensions ; one is through acquiring the capability of using different, more advanced and effective processes, practices, methods ,tools, techniques , and procedures; the other is through systematizing ,standardizing , and continuously refining and improving the overall practice from deeper understanding of the relationships and functionalities of the practices . The analogy shows two aspects of maturity, one which is gained through knowledge and skills, through learning and use of new or more advanced way of doing things; the other is gain in maturity through standardizing, systematizing and refining the process, practices ,methods and tools. The former one will help us improve our effectiveness as our capability of using different and advanced method, thus we can select the appropriate method and employ it. Whereas; the later one impacts more the efficiency of attaining a goal as the standardization and systemization help complete the work fast and help avoid most of rework and ensure consideration of every aspects

Maturity is the extent to which a specific process is explicitly defined, managed, measured, and controlled. Maturity implies a potential for growth in capability and indicates both the richness of an organization's project Management process and the consistency with which it is applied in projects throughout the organization (Paulk et al., 1993). Organizational Maturity is "the extent to which an organization has explicitly and consistently deployed processes that are documented, managed, measured, controlled, and continually improved" (Cooke-Davies, 2005).

Maturity is a comparative level of advancement an organization has achieved with regard to any given process or set of activities. Organizations with more fully defined and actively used policies, standards, and practices are considered more mature. Maturity is the level of sophistication that indicates organization's current project management practices and processes. The degree to which an organization practices project management measured by the ability of an organization to successfully initiate, plan, execute, monitor and control individual projects. (Project Management Institute (PMI), 2013). Maturity in project management is a never-ending journey, with a never-ending cycle of bench-marking and continuous improvement (Kerzner, 2001). Maturity of a process is "the extent to which a specific process is explicitly defined, managed, measured, controlled, and effective (Paulk et al., 1993).

Assessment of PM maturity includes a minimum personal and/or group interviews, artifact collection and evaluation, survey, and benchmark comparison to established standards. Typically organizations start the assessment with a baseline assessment of their current situation. The baseline assessment enables an organization to identify areas that need immediate actions and areas that will have an impact and provide greatest return on investment. This helps the organization prioritize its improvement actions and plan for continuous improvement (Crawford, 2002).

PM maturity assessments are typically divided into two key assessment processes: audit and self- assessment. Audits collect and compare data against a reference standard, evaluating the degree to which the criteria have been fulfilled, whereas self-assessments are designed to evaluate the strengths, weaknesses, and opportunities for improvement against a number of dimensions. Audits are primarily designed to support an external driver of compliance, whereas self-assessments are typically more internally focused on improvement" (Mullay, 2006).

2.4 Project Management Body of Knowledge

The PM body of knowledge is a standard for managing most projects. It is an inclusive term which describes the overall knowledge with in the profession of project management. It includes proven tools and techniques used to manage project management processes towards successful project outcome. The body of knowledge identifies key knowledge

areas of project management skills and activities that every practitioners need to know and master in order to become fully trained in their profession. This knowledge area encompasses a broader overview of the project management processes. There are nine knowledge areas according to PMBOK guide (PMI, 2008).

2.4.1 Project scope management

Project scope management includes the processes required to ensure that the project includes all the work required and to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project (PMI, 2013). The project scope management includes four critical activities; Scope definition, Work break-down structure (WBS), Requirements Definition, Deliverables Identification and scope change control (IMSI, 2005). A good scope management ensures that the scope is well defined and communicated clearly with all stakeholders.

2.4.2 Project time management

Project time management includes the processes required to manage the timely completion of the project. The time management like in project management is framed into three key activities; Schedule Development (including activity definition and sequencing), Schedule Control and schedule integration (IMSI, 2005).

2.4.3 Project cost management

Project cost management includes the processes involved in planning, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget. According IMSI (2005) Project cost management contain project Cost Definition (Estimating & Budgeting), Resource Planning, Performance Measurement and project Cost Control.

2.4.4 Project quality management

Project quality management includes the process and activities of the performing organization that determine quality polices, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken. It works to ensure that the project requirements, including product requirements, are met and validated (PMI, 2013). Quality planning, quality assurance and quality control are the main processes in project quality management (IMSI, 2005).

2.4.5 Project human resource management

Human resource management is core element of the project management knowledge areas and critical for project success. It is the process required to make the most effective use of the people competence for a project. HRM has three main processes which is organizational planning, staff acquisition and team development (PMI, 2008) (IMSI, 2005).

2.4.6 Project risk management

Project risk management is the process concerned with identifying and responding to project risk. Risk management maintains a balance of focus on threats and opportunities and with proper management actions the likelihood of identified risks can be reduced or eliminated. The project risk management includes risk identification, risk analysis, risk response and contingency plans and risk ownership. Risk Identification, quantification, Risk Response development and documentation (IMSI, 2005).

2.4.7 Project communication management

Project communications management includes the processes required to ensure timely and appropriate planning, collection, creation and distribution, storage, retrieval, management, control, monitoring and the ultimate disposition of project information (PMI, 2013). Project communication management includes communication planning, information distribution, performance reporting, issue tracking and management (IMSI, 2005).

2.4.8 Project procurement management

Project procurement management also known as Contract Management. It involves processes required to acquire goods and services from vendors. It is also concerned with procurement planning, soliciting bids for products and services, selecting potential vendors, contract administration and contract close-out. According IMSI (2005) Project procurement management includes procurement planning, requisition, solicitation and contract management.

2.4.9 Project integration management

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. This knowledge area is used to integrate the outputs of other project management body of knowledge for project planning process and creation of consistent, comprehensive and well-designed project processes and

activities and coordinating of the various activities of the project planning, execution and control of the project (PMI, 2013).

2.5 Project Management Maturity Model (PMMM)

Project management maturity refers to the progressive development of an enterprise-wide project management approach, methodology, strategy and decision making process. Maturity models provide framework to organizations for improving their performance across different business areas. According to (Mullaly, 2014), framework provided by maturity model enables organizations to access and improve its processes. Once the initial level of maturity and areas for improvement are identified, the PMMM provides a roadmap, outlining the necessary steps to take toward project management maturity advancement and performance improvement (Crawford, 2006).

For the purpose of this paper shortlisted following project maturity models from various literatures which have been developed so far by different organizations and individuals.

1. The IMSI Project Management Assessment Model
2. Organizational Project Management Maturity Model (OPM3)
3. Capability Maturity Model Integration (CMMI)
4. Kerzner Project Management Maturity Model (K-PMMM)
5. PM Solution'S Maturity Model
6. Project Management Process Maturity Model-PM2

The majority of maturity models have adapted the CMM's five levels of maturity stage beginning from lower level of maturity, initial (Level 1), to the highest level of maturity, continuous improvement(level-5)

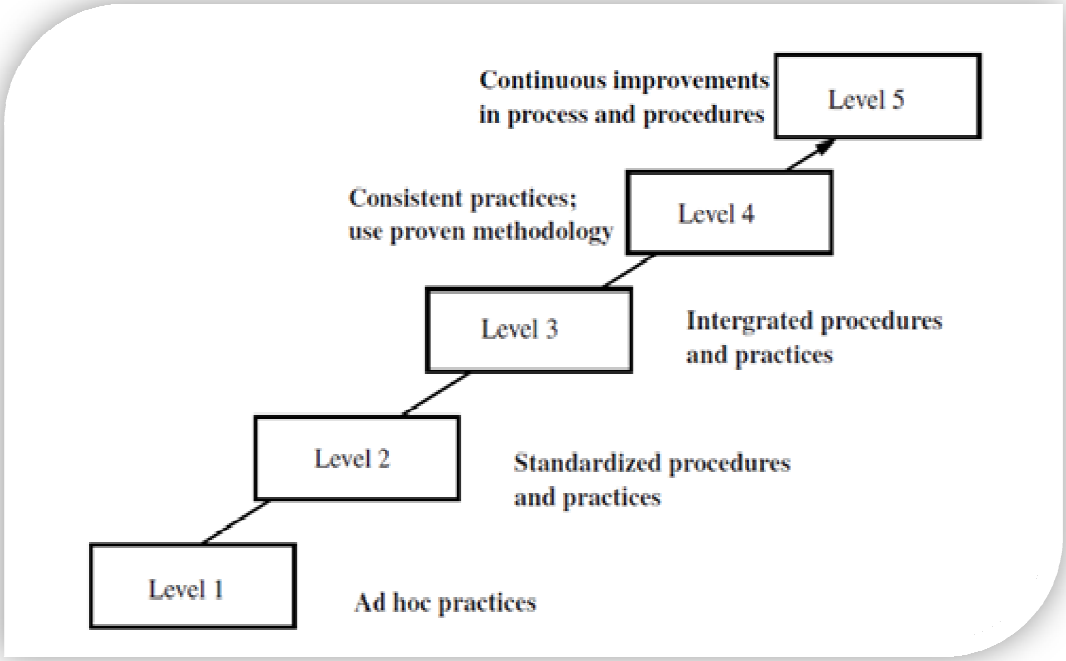

Figure2.1. A typical five level PM maturity Model

Attaining a higher level of maturity is an effort that requires significant investment and the commitment of senior management. Not every organization is expected to reach the highest maturity level; rather each organization should decide a level that would be optimal for its context and aim for attaining that (Crawford, 2002). Generally, to derive the benefits of maturity , organizations should exert continuous and consistent effort , have strong executive management support for the process ,emphasis on project management best practices ,set reasonable goals, implement changes step by step, conduct project management training , create opportunity for sharing knowledge across the organization and always target incremental improvement. It should be noted that, achieving a higher maturity level does not mean that the organization should always use sophisticated tools and methodologies. Rather, the organization can and should still be able to use tools and methods that are typical of lower level depending on the complexity and nature of each project. A higher maturity level mean only the organization has the capability to selectively choose and apply the proper PM processes, practices and tools (Kwak & Ibbs, 2002).

2.6 REVIEW OF MATURITY MODELS

2.6.1 IMSI PROJECT MANGEMENT ASSESMENT MODEL

IMSI's project management assessment model is a typical, five-step maturity model, as this form provides a solid foundation from which to build. IMSI uses this model to guide an evaluation of the levels of sophistication contained in various processes used by an organization to manage its projects.

The IMSI assessment model is employed to identify incremental steps to improve how a company manages its projects and to increase the likelihood of achieving project success. The IMSI assessment model looks at each of the project management knowledge areas and the enablers, critical elements and processes associated with them. If, as asserted earlier, the benefits derived from project management increase in proportion to how well project management processes are used, the intent of the IMSI project management assessment model is to help organizations better use the project management processes, elements, and enablers.

IMSI's assessment model, segmented by the eight key knowledge areas as described on Appendix c. This project management body of knowledge are project scope management, project time management, project cost management, project quality management, project risk management, project human resource management, project communication management and project procurement management. In IMSI each knowledge area is broken into significant sub elements, and for each sub-element, the model describes touch-points on the continuum of improvement. And the model is characterized as a stair-step process as it is showed graphically on figure 2.2.

Project management is complex process, which requires more than a cursory sharing of Lessons Learned or simple declaration of Best Practices to identify and institutionalize improvements that will benefit all future projects. Maturity assessments of organizational development have been created and applied to a number of different companies and industries to help manage the challenges of technological, economic, and competitive change and to point the way to institutional improvements. The result of a Project Management Assessment will lead management towards setting goals and prioritizing the areas that require improvement. It will further provide a baseline by which the

organization can track the progress made towards its goals. It will ultimately help the organization build a culture of Project Management excellence. (IMSI, 2005)

IMSI assessment model has five step maturity levels regard to the application of eighty project management body of knowledge for the projects the organization is managing as described on the following figure

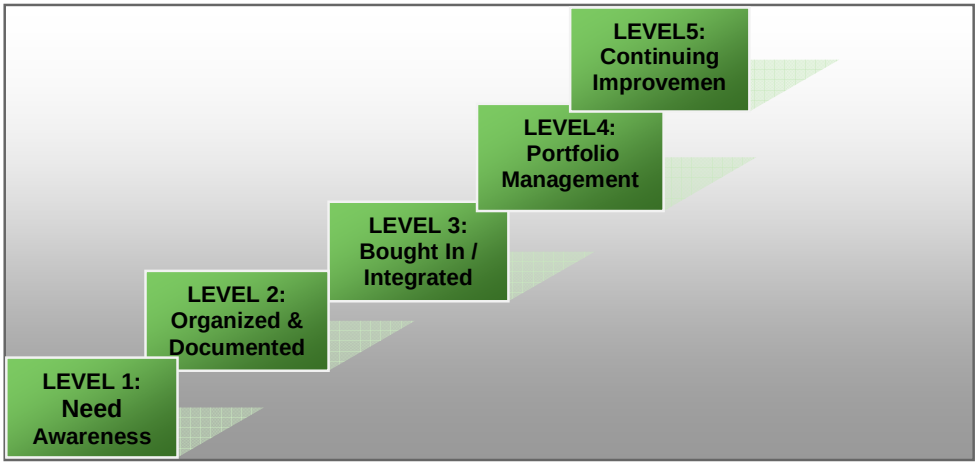

Figure2.2 IMSI's Project Management Assessment Model

2.6.2 Organizational Project Management Maturity Model

The OPM3 maturity model is a PM maturity model developed by PMI through worldwide volunteer contribution of PM practitioners and consultants in diverse industries. The model defines knowledge, assessment, and improvement processes for organizations project, program and portfolio management practices. Organizational project management provides a framework that integrates project, program and portfolio management of organization for all the best practices (PMI-OPM3, 2013). OPM3 has defined five maturity levels for performing maturity assessment of Project, Program or Portfolio Management either collective or individual.

Description of maturity levels for OPM3 is:

Level 1: None – no such practice exist

Level 2: Standardize – a standardized process of doing projects have been documented and communicated within organization. This practice is not used by all the projects but only few.

Level 3: Measure – Standardized process is used by all the projects within organization and processes are measured to evaluate effectiveness for organization.

Level 4: Control – measured process is corrected for poor application of the standardized practice. Upper and lower limits are established and process is analyzed.

Level 5: Improve – Continuous improvement of process becomes a practice for outcome of Best Practice standard.

Organizational project management maturity is measured in *OPM3* by assessing the existence of Best Practices within the OPM domains (Project, Program, and Portfolio). In general, the term Best Practices refers to the optimal methods, currently recognized within a given industry or discipline, to achieve a stated goal or objective (Yimam, 2011)

2.6.3 Capability Maturity Model

Capability maturity model is the first maturity model to be developed. The model was developed by the software Engineering Institute at Carnegie Mellon University. The model was initially developed for use in improvement of software development processes. Later it was extended for use in other areas of systems, and software engineering and procurement. The model was primarily developed to evaluate software contractor's capability for contract award and administration purpose. Later the model has been used by software developers as a guide for the improvement of their processes (Sarshar, Finnemore, Haigh, & Goulding, 2000).

The five maturity levels according CMM are the following.

1- Initial: The software process is characterized as ad hoc, and occasionally even chaotic. Few processes are defined, and success depends on individual effort.

2- **Repeatable**: Basic project management processes are established to track cost, schedule, and functionality. The necessary process discipline is in place to repeat earlier successes on projects with similar applications.

3- **Defined**: The software process for both management and engineering activities is documented, standardized, and integrated into a standard software process for the organization. All projects use an approved, tailored version of the organization's standard software process for developing and maintaining software.

4- **Managed**: Detailed measures of the software process and product quality are collected. Both the software process and products are quantitatively understood and controlled.

5- **Optimizing**: Continuous process improvement is enabled by quantitative feedback from the process and from piloting innovative ideas and technologies (Yimam, 2011).

2.6.4 Kerzner‟s PM Maturity Model

Like most of the other maturity models this model has also five levels of maturity; however, the naming and the attributes of the levels slightly differ from the others. Unlike the other models, this model emphasis benchmarking and make benchmarking the forth level on its maturity model. (Yimam, 2011).

Level 1-Common Language (Initial Process): In this level, the organization recognizes the importance of project management and the need for a good understanding of the basic knowledge on project management and the accompanying language or terminology. In the first level, project definition and awareness are important (Kerzner, *2002).*

Level 2-Common Processes (Repeatable Process): In this level, the organization recognizes that common processes need to be defined and developed such that successes on the project can be repeated on other projects. Also the recognition of the application and support of the project management principles to other methodologies employed by the company is included. In this level, the key process areas are business case development, project establishment, project planning, monitoring and control, stakeholder management and communications, requirements management, risk management, configuration management, management of suppliers and external parties(Kerzner, *2002).*

Level 3-Singular Methodology (Defined Process): In this level, the organization recognizes the synergistic effect of combining all corporate methodologies into a singular methodology, the centre of which is project management. The synergistic effects also make process control easier with a single methodology than with multiple methodologies. This level provides these key areas; benefits management, transition, information management, organizational focus, process definition, training, skills and competency development, integrated management and reporting, lifecycle control, inter-group co-ordination and networking, quality assurance, centre of Excellence (COE) role deployment (Kerzner, *2002).*

Level 4-Benchmarking (Managed Process): This level contains the recognition that process improvement is necessary to maintain a competitive advantage. Benchmarking must be performed on a continuous basis. The company must decide whom to benchmark and what to benchmark. Within this level, management metrics, quality management, organizational cultural growth and capacity management are the key process areas (Kerzner, *2002).*

Level 5- Continuous Improvement (Optimized Process): In this level, the organization evaluates the information obtained through benchmarking and must then decides whether or not this information will enhance the singular methodology. The key process areas are proactive problem management, technology management and continuous process improvement in this level (Kerzner, *2002).*

Levels	**General descriptions**	**Main characteristics**
Level 1 Common Language	Organizations recognize the importance of project management and the need for a good understanding of the basic knowledge of PM and its language/ terminology.	None or sporadic use of project management. No Executive-level support. No investment or support for project management training.
Level 2 Common Processes	Organizations recognize the need for common processes and they make a concerted effort to use project management and develop processes and methodologies to support its effective use.	Recognition of benefits of PM. Organizational support at all levels. Recognition of need for processes/methodologies. Recognition of the need for cost control. Development of a project management Training Curriculum.

Level 3 Singular Methodology	Organizations develop singular methodologies (rather than using multiple methodologies) to best achieve synergy and process control.	□ Total commitment to the concept of PM. □ Integrated processes: Example integrated PM and TQM. □ Cooperative culture. □ Visible management support at all level. □ Informal project management based upon guidelines and checklists with little paper work, rather than rigid policies and procedures. □ Training and education.
Level 4 Benchmarking	Organizations perform benchmarking on a continuous basis against those practiced in similar and non-similar industries. Few selected critical success factors are benchmarked.	□ Establishment of project office (PO) or a center of excellence (COE) that is dedicated to the project management improvement process □ Performance of both quantitative and qualitative benchmarking.
Level 5 Continuous improvement	Organizations evaluate the information learned during benchmarking and implement the changes necessary to improve the PM process. Especially on existing Process Improvements, Integrated Process Improvements, and Behavioral, Benchmarking and Managerial Issues.	□ Creation of lessons learned files and transfer of knowledge to other projects and teams □ Recognition of the need for and implementation of a mentorship program for future project managers □ A corporate-wide understanding that strategic planning for project management is a continuous, ongoing process.

Table 2.1: Summary of Kerzner ‘s PM Maturity Model (Yimam, 2011).

2.6.5 PM Solutions‟ Maturity Model

This model is developed by mirroring PMBOK's knowledge areas with that of CMM's five level maturity stage. The model examines an organization's PM implementation across the nine PM knowledge areas, which are in turn broken down in to components (Crawford, 2002).

Levels and their Key attributes Maturity Level	**Key attributes**
Level 1 **Initial Process**	Ad hoc processes. Management awareness.
Level 2 **Structured Process and Standards**	Basic processes; not standard on all projects; used on large and highly visible projects. Management supports and encourages use of processes. Mix of intermediate and summary-level information. Estimates and schedules are based on expert knowledge and generic tools. Mostly a project-centric focus.
Level 3 **Organizational Standards and Institutionalized Process**	All processes are standard for all projects and are repeatable Institutionalized processes. Summary and detailed information. Informal collection of actual data. Estimates and schedules based on industry standards More of an organizational focus. Informal analysis of project performance.
Level 4 **Managed Processes**	Processes are integrated with corporate processes. Management mandates compliance. Management takes an organizational entity view.

	Solid analysis of project performance. Estimates and schedules are normally based on organization. Management uses data to make decisions.
Level 5 **Optimizing Process**	Use of Processes to measure project effectiveness and efficiency. Processes in place to improve project performance.

Table 2.2: PM solution's five Maturity summery (Yimam, 2011)

2.6.6 Project Management Process Maturity Model-PM2

The PM2 model is one of the pioneer PM maturity models developed. The model was developed by William C. Ibbs and Kwak in 1997. Like the CMM model, the PM2 model has five levels of maturity with slight difference in its use of terminologies. The model divides PM processes and practices into eight PM knowledge areas and the model evaluates organization's PM maturity through the assessment of these knowledge areas.

Maturity Level	**Key PM Processes**	**Major Organizational Characteristics**	**Key Focus Area**
Level-1 **(Ad-hoc Level)**	No PM processes or practices are consistently available. No PM data are consistently collected or analyzed.	Functionally isolated. Lack of senior management support. Project success depends on individual efforts.	Understand and establish basic PM processes.
Level-2 **(planned Level)**	Informal PM processes are defined. Informal PM problems are identified. Informal PM data are	Level-2 (planned Level)	Informal PM processes are defined. Informal PM problems are

	collected.		identified. Informal PM data are collected.
Level-3 (managed)at project Level)	Formal project planning and control system are managed. Formal PM data are managed.	Team oriented (medium). Informal training of PM skills and practices.	Systematic and structure planning and control for individual project.
Level-4 (Managed at corporate level)	Multiple PM (program Management). PM data and processes are integrated. PM processes data are quantitatively analyzed, measured and stored.	Strong team work Formal PM training for project team	Planning and controlling Multiple projects in a professional manner
Level-5 (Continuous learning)	PM processes are continuously improved PM processes are fully understood PM data are optimized and sustained	Project driven organization Dynamic energetic ,and fluid organization Continuous improvement of PM processes and practices	Innovative ideas to improve PM processes and practices

Table 2.3: PM2 Maturity Models Summary

2.7 Maturity levels

Maturity levels enable organization to identify a roadmap for improvement and it mainly focuses on continuously improvement in the long term strategic commitment. But also, short term improvements can be targeted to achieve specific goals. However, real benefits can be acquired through continual process improvements [Office of Government Commerce, 2010]. There are five maturity levels developed by CMMI and P3M3 while, OPM3 has four levels of maturity. Other maturity models developed by several private

project management consultancies or professional project organizations also uses five levels of maturity, despite some differences in terminology; each maturity model has a clear pattern and adopted from the generic model of progression toward project management maturity (Weldemariam, 2013).

The basics of maturity level starts with the assumption of project management practices with in the firm are not planned and are not collectively employed. The last stage of maturity assumes that project management techniques and procedures are institutionalized and actively exploring continuous improvement and seeking to move beyond these in innovative ways. The maturity levels described in each maturity assessment models are similar on the context contain in each levels as described below (Weldemariam, 2013).

Level 1: Initial Process

‘‘There is some recognition about the project management processes. Management has little awareness of the need for project management. There are not established practice and standards of project management. Documentation and other supportive project management processes are loose and not well established within the organization. Organizations are not able to repeat past successes consistently mostly due to the fact that process description and lack of documentation. At level 1 maturity, organization can deliver projects successfully but these success factors are linked to key individual contributions rather than enterprise-wide knowledge and capability’’ (Pennypaker, 2001).

Key characteristics

- Projects are handled differently / informal approach
- Projects are highly dependent on the project manager
- Little management support for project management
- No formal way to gather lessons learned and used to other projects
- Project outcomes are unpredictable

Level 2: Structure, Process and Standard

‘At this level, basic project management processes and standards are established and mainly used on large and visible projects. The standard is repeatable and is applied to basic project management process. The standard is not considered at organization level and mostly focus on projects. There exists proper documentation to the basic processes. Management supports and encourages the implementation of project management

processes though there lacks consistency and involvement to comply for all projects. Functional management get involved in key projects and executed in a systematic approach. Some basic tools and techniques are applied for example tracking project cost, estimates; schedules are based on expert knowledge and generic tools'. [Pennypaker, 2001, p.25]

Key characteristics

• Managed support for project management
• Repeatable processes are adapted to basic project management process
• Use of common tools and techniques to key processes
• Predictable project outcomes are predictable
• Project management processes tools and techniques are applied

Level 3: organizational standard and institutionalized process

'Project management processes are well established and exist at organizational level. At this level, stake holders are actively involved and considered as integral members of the project team. All processes and standards are institutionalized with formal documentation. Management is involved in key project issues and decisions. Each project is evaluated and managed in light of other projects'. (Pennypaker, 2001)

Key characteristics

• Management support for project management processes
• Efficiently plan, organize, manage, integrate and control each projects
• Project team members are well trained in project management
• Consistent use of tools and techniques for project management process
• Lessons learned and previous project experiences are well organized and utilized for other projects

Level 4– Managed process:

Project management processes and standards are well established, matured and quantitatively managed. It is also integrated with other corporate processes and systems. All projects and changes are evaluated based on different efficiency and effectiveness metrics from cost estimates, baselines estimates and earned value. Projects are managed from past experience and future expectations. Project information is available to optimize the business decisions and integrated with the other corporate systems. At this level, there

is holistic view and considering projects as organization entity. Project portfolio management is integrated into the organizational business strategy (Pennypaker, 2001).

Key characteristics

• Active Management support for integration of business strategy and project execution

• Efficiently plan, organize, manage, integrate and control several projects

• Database of previous project data is well maintained and utilized

Level 5 – optimizing process:

Processes are well institutionalized approach to continuously improve the project management processes and project performance. There is continuously examining of lessons learned and this

is used for improvement of project management processes, standards and documentation. The intention of management and the organization at this level is not only for managing projects effectively but also focused on continuous improvement. [Pennypaker, 2001, p.25]

Key characteristics

• Actively encouraged of project management improvement

• Flexible, project-centered organization structure

• Adopted career program for project managers

• Project management training is key and crucial in staff development

2.8 Empirical literature review

This part of literature review will discuss related articles and journals to the topic under study. In 2013, Temesgen Tewelde discussed the assessment of project management capability: A case study on Mesfin Industrial engineering PLC. The aim of the study was to develop an understanding of what project management maturity is and assess the current level of maturity of the company using PM solution project management maturity Model. A case study was the research design used by the author and both qualitative and quantitative research method were used in collection and analysis of data. Primary data were collected through semi structured questioner and interview, and secondary data were collected through a detailed literature reviews including PM books, some scientific and recent project management journals, thesis works and other related topics. According to 'five level maturity' the result of the assessment suggests that the company was operating at a performance level of 2 and below. This represents that some project management

processes were defined but not consistently applied to all projects. It also shows that maturity level 2 was not achieved by all the project management knowledge areas and best practices. The assessment tool also identifies areas to be emphasized for significant improvements. The result also suggests the need to work more on these lower maturity levels before stepping up to next maturity level. Furthermore, this result indicates a path for the next maturity level 3, which requires the development of consistent and comprehensive approach to project execution at organizational level and which could be applied to all projects.

In 2015, Kassu Girma also discussed in his thesis about assessment of project management maturity at landsvirkjun–power projects department division. The research aim assessment of project maturity in Power Projects Department in ten project management body of knowledge using PM Solutions Project Management Maturity Model with the objective of provides a clear picture of current state, define future state, Identifies the gaps and provides a roadmap for organization change. Case study was used as research design and face to face interviews with five project managers were conducted in this assessment to gather data about the project management practices at Landsvirkjun-Power Projects Department. The key characteristics of the five level maturity models were used as criteria to evaluate each component of knowledge areas based on the qualitative data result obtained from conducted interviews and the data obtain through interview analyzed quantitatively using scoring mean. According the assessment the overall project management maturity at Power Projects Department found at maturity level 3. This indicates that most organizational standards and processes were achieved by most of project management knowledge areas and applied to all projects. However, in some cases, knowledge areas were not completely standardized and thus processes not applied properly and ineffectively. The assessment tool also identifies areas to be focused for improvement and recommended that formal training be provided based on project management knowledge areas including organizational standards and processes of project management for the project team and others.

The other literature reviewed were thesis by Muhammad Mateen which were published on 2015 with the title of measuring Project Management Maturity - A framework for better and efficient Projects delivery. The research objective were to perform project management maturity assessment of two departments in selected organization in four

project management knowledge areas which were scope, time, cost and risk project management with specific objective of providing basis to understand how project management maturity model can be used to improve project management process and suggesting improvements based on measured OPM3 for better and efficient projects delivery. To perform this thesis the researcher use case study as research design or framework for collection and analysis of data, and survey questioner, internal document analysis and informal observation were used as a method to collect data. Five persons were selected to collect data using survey questioner and the data analysis was performed based on logical sequence of literature review. According the assessment the result obtained were, the company has strong realization for standardized project management processes, a clear understanding of project management processes and a desire to improve processes was found among participants of the two department , it was also observed that although standardization of project management procedures provide direction on how to deliver projects but it is not sufficient alone and in the assessment it is also observed department 1 was more mature than department two regarding to assessed knowledge areas. Some of the recommendation given by the researcher were, the company need to have clearly defined procedures to handle scope change during project execution, project time durations for each activity should be determined by project management team based on resources availability, Standards should be defined for project cost contingency reserves and existing risk management standards should be evaluated.

CHAPTER THREE

3 Research Design and Methodology

Methodology section describes framework that is used to conduct this project work. This framework is described in terms of research design, research method, target population , sample and sampling design, data collection and data analysis.

3.1 Research Design

Descriptive, qualitative and quantitative research method is used to meet the purpose of this study. Descriptive research studies are those studies which are concerned with describing the characteristics of a particular individual, group or situation. Descriptive research presents a picture of the specific details of a situation, social setting, or relationship. For conducting these research both qualitative and quantitative research approach also used. Qualitative approach of the study was aimed for a more extensive understanding of the company's project management practices with little information available beforehand. The quantitative approach was based on theoretical consideration and existing knowledge. (Van der velde, Janson & Anderson, 2004)

3.2 Target Population of the study

The aim of this project work is to perform maturity assessment on project management practices of the selected company and provide improvement recommendations. The target population considered for the study was senior managements of Homa construction PLC in four sections which were project follow up and quality control, Human resource, procurement, and finance section. Since the company follow centralized way of project management senior managements of these four departments are the responsible body for managing eight project management knowledge areas of the study and they also have deeper information than the ordinary project management team members on the project management practice of the company.

3.3 Sample and sampling design

The sampling design for this project work is non probability purposive sampling. The reason behind for using purposive sampling is to select a sample who knows well about the project management practice of Homa construction PLC and to select a sample who will best able to answer the research question of this project works since every staffs don't have the same or equal information regarding the project management practice of the company and the knowledge areas that used in this project work as its discovered through

the visit made on the company. According Thornhill and Saunders (2009), Purposive or judgmental form of sampling is often used when working with very small samples and when the main goal of purposive sampling is to focus on particular characteristics of a population which will best enable you to answer your research question.

The following characteristics were used to select respondents for collection of data:

- Each respondent have personal knowledge of project management and they involve on most of projects takes place on their respective department
- Each respondent must have knowledge of project management practices for their respective department of company.

By using the above mentioned characteristics six respondents were selected as a sample for collecting data using questionnaires and interview from their respective departments within company as listed below

- Three respondents were involved form project follow up and quality control section (one respondent for project scope & time management , one respondent for risk and quality management and one respondent for communication management questions)
- One respondent was from Human resource section (for project human resource management questions)
- Two respondent were from Finance and procurement section (one respondent for project cost and one respondent for procurement management questions)

3.4 Data collection Methods

Data can be acquired from Secondary and primary sources or from both. Primary data are those which are collected afresh and for the first time, and thus happen to be original in character. The secondary data, on the other hand, are those which have already been collected by someone else and which have already been passed through the statistical process. For the purpose of this study both primary data and secondary data will be used. There are several ways to collect data for case study research design. This includes surveys, structured interviews, direct observation, document analysis, and use of surveys either supervised, postal or via internet (Bryman, 2012).

This study focused on gathering primary data by using supervised semi structured questionnaire and interview. The semi structured questionnaire contain two parts, part one

contain questions about respondent general information and part two contain questions designed to pinpoint the maturity level of project management practices in the company in each knowledge areas. The questionnaire was mainly designed to assess the level of project management maturity in each project management knowledge areas using IMSI maturity assessment model. The researcher was present with each participant while filling out questionnaire. In structured and semi structured questionnaire, respondents may interpret questions in different context (Bryman, 2012). In order to avoid this issue, researcher was present with respondents while they were filling survey. It provided the benefit of instantly clarifying any issue raised by respondents for filling survey. And Interview is a practical tool used to collect qualitative data. According to Bryman (2004) "the aim of interview is to elicit all manner of information from the respondents; towards a specific topic, behaviour, norms, values and beliefs are the general outputs from interviews". On this research interview question were also used to assess the actual project management practice of the company on eight project management knowledge area. The overall questionnaire and interview used on this study require detailed discussion.

Secondary data will be collected through a detailed literature reviews including PM books, some scientific and recent project management journals, thesis works and other related topics from library and internet.

3.5 Method of Data Analysis

In data analysis the data collected through interview from six persons on their respective department were analyzed qualitatively to describe the current project management practice of the company in each project management body of knowledge .The data collected through semi structured questioner from six respondents were analyzed quantitatively through five-levels of maturity and scoring mean to assess maturity of the company in managing projects in each knowledge areas. This data analysis method uses other research works as reviewed on empirical study as guide line to conduct the data analysis.

3.6 Ethical Issues

The study was conducted by adhering to the research ethics. To assure the ethics of the study, the purpose of the study was clearly provided to the respondents and the response will be used for specified purpose of the research only. The responses were also kept confidential.

Chapter Four

4 Data Analysis and presentation

This chapter deals with the analysis, presentation and interpretation of primary data which was collected from respondents through questioner and interview on each project management knowledge areas from six respondents Homa construction PLC on their respective department.

4.1 Data Analysis

This part presents the result obtained from semi structured questionnaire as it shows in the table-3 below. The maturity level of each knowledge areas within the project department of the company estimated based on the mean value of each sub elements of the knowledge areas. On the questionnaire each respondents were asked to choose where their department stands in five maturity levels regard to sub elements of each project management knowledge areas. Then the mean of the five maturity levels scored by the respondents on each sub elements of knowledge areas was used to decide the maturity level of each knowledge areas, on the same time the mean of eight knowledge areas were used to define maturity levels of the company on project management as it shows on the table below.

Table 4.1: Result on maturity assessment of each knowledge area. Adapted from (Weldemariam, 2013) & (Girma, 2015)

NO	Project management body of knowledge	IMSI Project Management Assessment Model					Mean /Maturity Levels
		1st Level	2nd Level	3rd Level	4th Level	5th Level	
I	**PROJECT SCOPE MANAGEMENT**						**3.6**
1	Scope Definition					5	
2	Requirements Definition (Business & Technical)			3			
3	Deliverables Identification		2				
4	work break down structure					5	

5	Scope Change Control			3			
II	**PROJECT TIME MANAGEMENT**						**2.3**
6	Schedule Development (including activity definition and sequencing)		2				
7	Schedule Control		2				
8	Schedule Integration			3			
III	**PROJECT COST MANAGEMENT**						**3.5**
9	Project Cost Definition (Estimating & Budgeting)				4		
10	Resource Planning		2				
11	Performance Measurement				4		
12	Cost Control				4		
IV	**PROJECT QUALITY MANAGEMENT**						**3.0**
13	Quality Planning			3			
14	Quality assurance				4		
15	Quality control		2				
V	**PROJECT RISK MANAGEMENT**						**3.0**
16	Risk Identification and Quantification		2				
17	Risk Response Development and Documentation				4		
VI	**PROJECT HUMAN RESOURCE MANAGEMENT**						**3.3**
18	organizational planning			3			
19	Staff Acquisition					5	
20	Team Development and Professional development		2				
VII	**Project communication management**						**2.0**
21	Communication Planning		2				
22	Information distribution and performance reporting		2				
23	Issue trucking and management		2				

VIII	**Project procurement management**						**3.0**
24	Procurement planning				4		
25	Purchase requisition		2				
26	Solicitation / Source Control	1					
27	Contract Management / Closure		2				
PM maturity level							3.0

The number scored form 1 about to 5 on each row (27 Questions) on the table above represent the score given by six respondents on maturity levels of their respective department on each sub elements of project management knowledge areas and the row highlighted represent the scoring mean for sub elements on each knowledge areas. Therefore the number in each row (27 variables) represents the maturity level the company at each sub elements of knowledge areas as briefed below:

- Score 1 stand for maturity level 1 (Need awareness/ ad hoc, no formal pm process)
- Score 2 stands for maturity level 2 (Organized & documented/ implementing a pm methodology)
- Score 3 stands for maturity level 3(Bought in / integrated, pm practices used and adapted)
- Score 4 stands for maturity level 4(Portfolio/, pm processes measured and controlled)
- Score 5 stands for maturity level 5.(Improvement/ focusing on process improvement)

4.2 Data presentation

This section present the responses found from selected samples in terms of questionnaires and interview on their respective departments on each project management knowledge areas.

4.2.1 Project scope management

Project scope management was assessed for Scope Definition, Requirement Management, deliverable identification, Work breakdown Structure (WBS), and Scope change Control. The response were

- In Project scope management in Homa construction PLC, project scope determined as the direction given by the management. Collect requirement, define scope, create work break down structure, scope verification and scope control were used in entire project activities. Project scope definition is based on customer's technical and operational requirements and in processes of project scope definition inter project dependencies included, monitored and continuous processes improvement practiced.
- In requirement definition business requirements are enhanced and/or developed with cross functional team participation and technical requirements are gathered and quantified using standard forms and Standard processes are used for defining all requirements.
- The documentation of major deliverables includes management and customer involvement, all cross-functional (internal) deliverables are documented and a classification system is used to capture deliverables in line with project WBS in deliverable identification processes.
- A corporate wide classification system is used to capture deliverables in-line with corporate WBS, the WBS is used as the reference system for change control and the WBS is used as a reference for integrating other project management knowledge areas.
- Scope changed and controlled as a direction given by management, and a change control process is implemented on all projects, performance measurement techniques are standardized and applied.

4.2.2 Project Time management

Project time management was assessed for schedule development, project schedule control and project schedule integration. The result collected were, project schedule reviewed and approved by all members of the project team, suppliers, customers and it also integrate manpower and cost. Project schedule development including activity definition, sequencing and major dependencies between functional departments developed for high visibility projects. Master schedule plan used to document time management and project management software (MS-project) is a tool /technique the company currently using for time management. Project base line used to control project schedule by comparing the planned and the actual task status which is up dated on predetermined frequency not less than bi-weekly.

4.2.3 Project cost management

Project cost management was assessed for project cost definition (estimating and Budgeting), project resource planning, cost performance measurement and cost control. The result were, project cost estimate reflect prior project performance which compares actual amount verse estimate cost and project budget adjusted in accordance with risk mitigation plan. Project cost assigned in the company by projects not by task, by time, by department or by work break down structure. Resource planning processes documented to much project requirement to skill set and to schedule, and resource leveling accomplished within bounds of the project team. A System or a tool the company currently using for managing and tracking project cost is MS Excel and project engineers' spreadsheet respectively. The company has fully integrated system for cost control, project budget adjusted in accordance with the risk mitigation plan. Project cost performance measured and controlled and the performance to baseline used to forecast future projects. And Project team rewarded for positive cost control performance.

4.2.4 Project Quality Management

Project quality management was assessed for quality planning, quality assurance and for quality control. The result were, the company uses project documents as tool to mange project quality and the quality planning practice of the company uses formal quality plan with standard templates and resource identified with specific quality responsibility. Quality control practice uses guide line and deliverable templates available for product testing, and the quality assurance processes measured, controlled and used in all projects held by the organization.

4.2.5 Project Risk Management

Project risk management was assessed for risk identification and quantification, and risk response development and documentation practice. The result were, risk identification and quantification processes are documented and utilized for large projects. Management consistently involved with risks on large, visible projects and low, medium and high ratings used to quantify project risk levels. The project risk is analyzed after every progress evaluation based on the project team member experiences and expert judgments. For risk response development and documentation practice historical database expanded to include cross program risks and the company use decision tree analysis as a method or tool to manage and control risk.

4.2.6 Project Human resource management

Project human resource management was assessed for organizational planning, staff acquisition, team development and professional development practice. The results were, in organizational planning resource availability and competence analyzed, roles and responsibilities defined for all project personnel and organizational planning processes fully implemented in local business unit. Networking is a system or a tool currently the company using to plan human resource management. The staff acquisition processes based on enterprise resource forecasting and lesson learned. Project team engaged in scope and plan development, team meeting held frequently and effectively, team actively encouraged and supported with the company sanctioned team building exercises, project manager inputs for team member performance evaluation.

4.2.7 Project communication management

Project communication management was assessed for communication planning, information distribution, performance reporting and for issue tracking and management. The results were, in communication planning key project stakeholders identified for certain standard topic reports, periodic summery reports on high visibility projects. Basic information retrieval and distribution processes in place and common report formats and frequency defined and hard copy or electronic files shared; status, progress and phase completion reports in place. Issues management processes documented and used, issue description and resolution plans discussed in a team meeting and issue resolution plan reviewed with business unit management.

4.2.8 Project procurement management

Project procurement management was assessed for procurement planning, purchase requisition, solicitation or source control, contract management and contract closeout. The results were, in procurement planning practices make or buy decision is based on organizational requirement and made by cross functional team. Procurement department take a lead on requesting items per organizational evaluation criteria. In solicitation or source control no processes used for vendor contact, evaluation and negotiation, but status plans and change control implemented in contract management practice.

Chapter Five

5 Summery, Conclusion and Recommendations

This chapter presents the summaries of the findings, conclusions derived from the analysis and the recommendations that are suggested to the company for effective project management practice.

5.1 Summary of findings

Based on the analysis of chapter four, the following summery findings were established are outlined here under:

- Project Scope , cost and HR management had relatively higher level of maturity (greater than 3), this indicate that Project management processes are well established and exist at organizational level regarding this three project management body of knowledge. For instance all processes and standards are institutionalized with formal documentation for scope definition and for defining all requirements. And a scope change control process is implemented on all projects, performance measurement techniques are standardized and applied and the documentation of major deliverables includes management / customer involvement. Regarding project cost management the company has fully integrated system for cost control, project budget adjusted in accordance with the risk mitigation plan, project cost performance measured and controlled and the performance to baseline used to forecast future projects. Consistent tools and techniques for project cost management were used like MS Excel and project engineers' spreadsheet. In Project human resource management ,for organizational planning resource availability and competence analyzed, roles and responsibilities defined for all project personnel, the staff acquisition processes based on enterprise resource forecasting and lesson learned, and project team engaged in scope and plan development, team meeting held frequently and effectively, team actively encouraged and supported by senior management .

- Project risk, quality and procurement management the company had an average level of maturity (less than or equal to 3). For instance risk identification and

quantification processes are documented and utilized for large projects also management consistently involved on risks for large, visible projects only not for all projects under taken in the company. The company use decision tree analysis as a method or tool to manage and control risk but project risk is analyzed after every progress evaluation based on the project team member experiences and expert judgments. The quality planning practice of the company uses formal quality plan with standard templates, resource identified with specific quality responsibility and quality assurance processes used, measured, controlled and used in all projects held by the company but no standard quality control in place. Regarding procurement management for instance procurement planning practice make or buy decision based on organizational requirement and made by cross functional team and procurement department take a lead on requesting items per organizational evaluation criteria but in solicitation or source control no processes used for vendor contact, evaluation and negotiation.

- In Project time and communication management the company had relatively low level of maturity (below 3). For instance in project time management project schedule reviewed and approved by all members of the project team, suppliers, customers and also integrate and include manpower and cost but project schedule development including activity definition, sequencing and major dependencies between functional departments developed only for high visibility projects. In communication management, key project stakeholders identified in communication planning for certain standard topic reports, periodic and summery reports required on high visibility projects only but basic information retrieval and distribution processes in place and common report formats and frequency defined.

5.2 Conclusion

The objective of this study was to assess the project management maturity of Homa construction PLC. This will provides the company a path and framework which enable firms to achieve excellence in project management and on project performance. Measure of project management maturity enables companies to identify how to improve project perform and how to deliver project with effectiveness.

According the assessment made the company currently running on level 3 project management maturity. This presents Project management processes are well established and exist at organizational level. Management and technical processes documented, standardized and integrated into some extent with other business processes. Senior managements provide support, stake holders are actively involved and considered as integral members of the project team and likely there is an established training program to develop skills and performance of individuals. But this maturity level also present that company does not have fully integrated , quantitatively analyzed , measured ,stored and continually improved project management data and processes for all of project management knowledge areas and sub elements.

During the assessment the knowledge area was broken into significant sub elements, and for each sub-element, the IMSI model describes touch-points on the continuum of improvement. since the result was the average of each sub elements of the knowledge area there were also the knowledge areas which presents a below or above maturity level form the maturity level of the company (which were level 3), this means there are project management knowledge areas and sub elements of knowledge areas in the company which doesn't fulfill or over fulfill the qualifications listed under level three project management maturity.

5.3 Recommendations

Literatures about project management maturity stated that higher level of project management maturity ensures effective projects delivery and it has a direct impact on project efficiency. Therefore if the company gets a higher project management maturity levels, the company most likely to have a higher project efficiency. According the assessment made Homa construction PLC is operating on level three project management maturity, hence to have a higher project management maturity level and higher project efficiency the following points recommended based on reviewed literatures on each project management knowledge areas.

- In scope management there were observed gaps on requirement definition and deliverable identification. To solve this gaps the company recommended all requirements to be tracked, full change control is used to capture impact of requirements changes and requirement changes should be evaluated for

applicability to other program and lesson learned should be captured. In deliverable identification a corporate wide classification system should be used in the line with corporate work break down structure and deviation from the corporate wide classification system should be captured.

- In project time management, project schedule development including activity definition, sequencing and major dependencies between functional departments should be developed for all projects and project schedule development processes should be regularly monitored and aligned with strategic company objectives. Improvement procedure should be also utilized for time management processes and lesson learned should be used to improve documented processes.
- For project cost management, in cost definition (cost estimating and budgeting), cost performance measurement and cost control practice continuous processes improvement and lesson learned should be done. Resource planning processes, resource leveling or prioritization should fully practiced for the entire enterprise, not for single project requirement.
- In project quality management , a neutral quality office should be established and should be involved in all projects takes place in the company and standards should be there for quality control practice, and the practice should measured, controlled and continuous processes improvement should exist in the enterprise
- In project risk management , risk identification and quantification practice or the risk management processes as a whole should be utilized for most of projects takes place in the company and cross project risks should also fully integrated with cost, time, finance and strategic objectives.
- In project human resource management , organizational planning process should fully implemented for entire enterprise and resource levelling or prioritization should accomplished across the entire enterprise. And for team and professional development technical training should provided and proactively met.
- In communication management, communication plan should be updated, refined throughout the projects and the plan should be linked to organizational planning. Information retrieval and distribution should be available via automated system, performance reporting should be there for all projects and project lesson learned should compile and shared across entire enterprise.
- In project procurement management, a make or buy decision should include historical data, the purchase requisition processes should fully integrate into

organizational system, and preferred vendors should be leveraged. In solicitation and contract management practice vendors should be evaluated and feedback to preferred vendor list and strategic alliance with preferred vendors should be considered.

Finally, further study is highly recommended for the organization for effective and efficient project management practice.

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APPENDICES

Appendix A: Questionnaires

Dear Participant:

My name is Eyerusalem Moges and I am a graduate student at Addis Ababa University School of commerce. For my final project, I am examining your company levels of maturity on project management. Enclosed with this letter there is a brief questionnaire that asks a variety of questions about your companyal practice on project management

The survey will take about thirty minutes to complete. Please note that your response is private and confidential. Individual respondents will not be identified in any data or reports. The survey responses will not be linked and used for other purpose beside the specified research objective.

If you require additional information or have questions, please contact me.

Sincerely,

Eyerusalem Moges

lilymoges23@gmail,com

Department of project management

Addis Ababa University School of commerce

Questionnaires

General Instruction and information:

Part I Includes general information

Part II Includes semi structured question

Please attempt to answer all the questions based on your knowledge of practice of project Management in your Company.

Part I: General Information

Direction: *Please provide the requested information on the space provided*

1. Position/role in the company (Required) _____
2. What is your level of education _____
3. What is your experience in project management _____
4. How long you work on this organization _____

Direction: *Please choose the statement that best describes each of the project management practice in your project or company. Please mark X on the level best describes your department practice on project management for each question.*

I. SCOPE Management Questions

Q1. The scope definition practice of your company best approximated by the statement

- only Project scope Statement is available on scope definition (ad-hoc)
- Project Charter mandated by organizational management
- Assumptions and constraints documented on scope definition
- Inter project dependencies included and monitored in scope definition
- Inter project dependencies included, monitored and continuous Process improvements practiced in scope definition.

Q2. Requirement definition on projects in your company best approximated by the statement

- General statement of business requirements and technical requirements are documented.
- Business requirements are developed following consultation with prime stakeholders, and technical requirements are quantified.
- Business requirements are enhanced and/or developed with cross functional team participation, technical requirements are gathered and quantified using standard forms, and Standard processes are used for defining all requirements.
- All requirements are fully documented by project team, cross functional and portfolio implications are reviewed and understood.
- All requirements are tracked , full change control is used to capture the impact of requirement changes and Requirement changes are evaluated for applicability to other programs and are captured as lessons learned.

Q3. Deliverable identification on projects in your company best approximated by statement

- Major Deliverables for each project are documented
- The documentation of major deliverables includes management / customer involvement, all cross-functional (internal) deliverables are documented and a classification system is used to capture deliverables, in line with project WBS (Work break down structure).
- All deliverables are enhanced and/or developed with cross functional team participation. A corporate wide classification system is used to capture deliverables, in-line with corporate WBS.
- Deviation from the corporate wide classification system for any deliverable is captured and evaluated for inclusion in the corporate system.

Q4. Work break down structure in your company best approximated by statement.

- Local WBS is used at the discretion of the Project Manager and a WBS may be generated by a network processing package.
- A project specific WBS issued on high visibility projects, the WBS is consistent for summary activities, and deliverables are associated with the WBS.
- A standard WBS is used by common business entities for all projects, the WBS is consistent for all activities, and deliverables are identified using the WBS.

- A corporate wide classification system is used to capture deliverables in-line with corporate WBS, the WBS is used as the reference system for change control, and the WBS is used as a reference, integrating the other project management knowledge areas.
- A corporate wide classification system is used to capture deliverables in-line with corporate WBS, the WBS is used as the reference system for change control, the WBS is used as a reference, integrating the other project management knowledge areas, process continuously improvement and lessons learned.

Q5. Scope change control in projects implemented in your company best approximated by statement

- Change control may be used by the Project Manager but would only be applied in crisis situations.
- A change control process is identified and used on high visibility projects
- A change control process is implemented on all projects; Performance measurement techniques are standardized and applied.
- Change control is integrated across knowledge areas.
- Change control is integrated across knowledge areas and there is continuous Process improvement and lessons learned.

II. Schedule Management Questions

Q6. Project Schedule Development (including activity definition and sequencing) practice in your company best approximated by a statement

- Most projects follow a process template for high level tasks or milestones only, no dependencies are established and not all projects have documented schedules.
- High visibility projects have schedules developed, major dependencies between functional departments (i.e. Engineering to Manufacturing), Schedules are baseline, a standard software package (e.g. MS Project) is recommended and made available by the corporation.
- WBS used as basis for detailed schedule, all projects has a schedule, Templates developed and Dependencies include all functional departments.

- Project Schedule Development (including activity definition and sequencing) processes regularly monitored and used for management decisions and aligned with strategic company objectives.
- Improvement procedures utilized for time management processes and lessons learned are examined and used to improve documented processes.

Q7. Project Schedule Control practice in your company best approximated by a statement

- Project Manager revises schedule as required and project baseline not utilized.
- Project baseline is used early in process; Planned vs. actual task status is updated on a predetermined frequency, no less than bi-weekly.
- Trend charts are created for planned vs. Actual performance of major tasks such as designs completed and designs released.
- Trend charts include additional data such as earned value as project schedule control practice.
- Improvement procedures utilized for time management processes lessons learned are examined and used to improve documented processes.

Q8. Schedule Integration practice in your company best approximated by a statement

- Only Engineering tasks are included
- Engineering and Manufacturing tasks are included and resource entries for manpower and cost are not included
- Schedules are reviewed and approved by all members of the project team, suppliers, and customers Integrated and include manpower and cost.
- Management Portfolio and Business Unit strategic decisions are based on efficiency and effectiveness metrics.
- Improvement procedures utilized for time management processes, Lessons learned are examined and used to improve documented processes.

III. Cost Management Questions

Q9. Project Cost Definition (Estimating & Budgeting) practice in your company best approximated by a statement

- Cost estimates rely upon "rules-of-thumb" or ad-hoc material take-offs, accuracy of cost estimates dependent upon experience of local "expert" and project costs aggregated
- Cost estimates rely upon historical data, accumulated by individuals or local business unit, accuracy of cost estimates dependent upon feedback from prior projects and Project costs distributed into time-phased project budget.
- Cost estimates rely upon historical data, accumulated for entire enterprise; documented process exists for updating cost estimating database with project actual and project budget time-phased in accordance with project schedule and Project budget is base-lined.
- Cost estimates reflect prior project performance, actual amount vs. Estimate, Cost estimates reflect prior project performance, actual timeline vs. Baseline and Project budget adjusted (buffered) in accordance with risk mitigation plan.
- Cost estimates reflect prior project performance, actual amount vs. Estimate, Cost estimates reflect prior project performance, actual timeline vs. Baseline and Project budget adjusted (buffered) in accordance with risk mitigation plan and Process improvement and lessons learned.

Q10. Project resource planning in your company best approximated by a statement

- Resource teams formed on an ad-hoc basis, resources assignments try to find best possible match between needs and available resources and project schedule revised to match available resources.
- Resource planning process documented to match project requirements to skill sets, to schedule and Resource leveling accomplished within bounds of the project team.
- Resource planning process fully implemented in local business unit, resource assignments tied to training and prior experience, resource leveling across projects accomplished within local business unit.

- Resource planning process fully implemented for entire enterprise, resource training tied to project assignments and resource leveling / prioritization accomplished across entire enterprise.
- Resource planning process fully implemented for entire enterprise, resource training tied to project assignments, resource leveling / prioritization accomplished across entire enterprise with process improvement and lessons learned for entire activity.

Q11. Cost Performance Measurement practice in your company best approximated by a statement

- Project commitments and Project expenditures tracked in aggregate. Individual reports compiled and presented as needed.
- Project commitments and expenditures compared to project budget, documented process / system used to track commitments and expenditures for all projects and Common report formats and frequency defined.
- Project commitments & expenditures tracked against progress plan, using earned value measurements or similar metrics.
- Performance controlled, measured, and performance to baseline used for forecasts of future projects.
- Performance to controlled, measured, and performance to baseline used for forecasts of future projects Process improvement and lessons learned

Q12. Cost Control practice in your company best approximated by a statement.

- Individual reports compiled and presented as needed.
- Cost control process developed, basic cost metrics used and baselines established in line with project schedule, and project commitments and expenditures compared to project budget.
- Formal project change control process utilized; Scope, Cost & Schedule reports integrated, and forecasts adjusted to reflect project actual cost.
- Fully integrated system for cost control, Project budget adjusted (Buffered) in accordance with risk mitigation plan and Project team rewarded for positive cost control performance.

- Fully integrated system for cost control, Project budget adjusted (Buffered) in accordance with risk mitigation plan, Project team rewarded for positive cost control performance Process, and continues processes improvement and lessons learned exist.

IV. Quality Management Questions

Q13. Quality planning practice in your company best approximated by a statement

- No corporate standard established
- Quality processes established and recognized
- Formal Quality Plan with templates used, resources identified with specific Quality responsibilities.
- Quality Office established and involved on all projects.
- Quality Office established and involved on all projects and Process improvement and lessons learned.

Q14. Quality Assurance practice in your company best approximated by a statement

- No corporate standard established and Some team standards established as needed
- Basic approach established, teams develop their own procedures and checklists as needed.
- Proactive approach taken using the standard tools and techniques
- Quality assurance processes measured, controlled and used on all projects.
- Quality assurance processes measured, controlled and used on all projects and there are continues process improvement and lessons learned.

Q15. Quality control practice in your company best approximated by a statement

- No standard process in place, driven by team members without procedures.
- Deliverable Templates and guidelines available for product testing
- Performance standards identified and measured.
- Standards in place and used, measured and controlled.
- Quality control results examined throughout process processes improvement and lessons learned

V. Risk Management Questions

Q16. Risk Identification and Quantification practice in your company best approximated by a statement

- No established practices or standards in place, Risk response is reactive or sporadic based on crisis.
- Processes are documented and utilized for large projects, Management consistently involved with risks on large and visible projects and Low, Medium, and High ratings used.
- Risk management processes are utilized for most projects, Metrics are used to support risk decisions at the project and the program levels and more complex rating systems are used i.e. Probability factors
- Cross project risks fully integrated with Cost, Time, Finance, Accounting and strategic objectives.
- Improvement processes are utilized to ensure projects are continually measured and managed against value-based performance metrics

Q17. Risk Response Development and Documentation practice in your company best approximated by a statement

- No strategy or planning for future risk events, documentation is minimal and results are not shared.
- Risk documentation is not centralized.
- Contingency plans and mitigation strategies are develop for each risk item and risk documentation is centralized and accessible to the company.
- Historical database expanded to include cross program risks
- Systemic Risk items are identified, documented and cataloged with lessons learned

VI. Human Resource management Questions

Q18. HR Organizational Planning practice in your company best approximated by a statement

- Ad-hoc means to assign personnel and assignments to projects, project schedule revised to match available resources.
- Project Manager defines skill requirements and creates responsibility matrix, and org Charts, organizational planning process documented to match project requirements to skill sets, and project schedule.
- Resource availability and competence analyzed, Roles and Responsibilities defined for all project personnel and Organizational planning process fully implemented in local business unit.
- Organizational planning process fully implemented for entire enterprise and resource leveling/prioritization accomplished across entire enterprise.
- Process improvement and lessons learned and Performance metrics used for HR

Q19. Staff Acquisition practice in your company best approximated by a statement

- Ad-hoc, driven by department management and staff selections try to find best possible match between needs and available resources.
- Planning of required staffing, Team members identified and reserved ahead of time and resource leveling accomplished within bounds of the project team.
- Resource pool management and prioritization, resources selected based on training and prior experience, and Resource leveling across projects accomplished within local business unit.
- Skills database used, Resource training tied to project assignments.
- Enterprise resource forecasting and lessons learned done on staff Acquisition processes.

Q20. Team Development and Professional Development practice in your company best approximated by a statement

- A Project teams formed on an ad-hoc basis, teamwork dependent on willingness and personalities of team members, Team meetings held occasionally, project Managers assigned based on likelihood of success and no Project Management career path.
- Team engaged in scope and planning development, Team meetings held frequently and effectively, Teamwork actively encouraged and supported with company-

sanctioned team building exercises, Project manager inputs to team member performance evaluations.

- Team co-located, team trained in conflict management techniques and project related careers and training requirements recognized.
- Technical training needs identified and proactively met, and Individuals placed in Project management roles only when there is a match between skills and requirements.
- Company values its people and does all it can to ensure project success and Projects tied to company success, and financial rewards tied to project success.

VII. Communication Management Questions

Q21. Communication planning practice in your company best approximated by a statement

- No corporate standards developed and broadcast, Individual reports compiled and presented as needed, and Project Manager expected to be able to report status when required.
- Key project stakeholders identified, Common format identified for certain standard-topic reports, Periodic summary reports required on high visibility projects.
- Documented Communications Plan prepared for all projects.
- Communications Plan updated and refined throughout project.
- Communication planning linked to organizational planning and Process improvement and lessons learned.

Q22. Information distribution and performance reporting practice in your company best approximated by a statement

- Project teams formed on an ad-hoc basis, Information distribution dependent upon sender developed list, performance reporting is Informal process, only via Project Manager and Individual reports compiled and presented as needed.
- Basic information retrieval and distribution process in place and common report formats and frequency defined and hard copy or electronic files shared Status, Progress and Phase Completion Reports in place.

- Formal information retrieval and distribution via a central system or repository, Trending and conducted on a regular basis, project Lessons Learned compiled and shared within business unit.
- Information retrieval and distribution available via an automated query driven database, Performance reporting expected for all projects, Project Lessons Learned compiled and shared across entire enterprise
- Stakeholders educated and able to mine data related to projects, Process improvement and lessons learned and Process improvement and lessons learned.

Q23. Issue Tracking and Management practice in your company best approximated by a statement

- Ad-hoc issues lists created when needed, Issues lists discussed in team meetings
- Issues Management process documented and used Issues descriptions and resolution plans discussed in team meetings and Issues resolution plans reviewed with business unit management.
- Issues consistently addressed in regular full team meetings, Issues Management process integrated with Scope Change Control process.
- Cross project issue implications managed.
- Process improvement and lessons learned Issue Tracking and Management practice.

VIII. Procurement Management Questions

Q24. Procurement planning practice in your company best approximated by a statement

- Pockets of planning may occur but are not formalized.
- Use of statement of work for make or buy decisions, Procurement management plan developed
- Formal analysis and recommendation reports used
- Make / Buy decisions based on organizational requirements and made by cross functional team
- Continuous improvement, Lessons learned, ·Make / Buy decisions include historical data and Just in time procurement introduced

Q25. Purchase requisition processes in your company best approximated by a statement

- No unique process for projects
- Procurement department takes lead on requisitioning items per organizational evaluation criteria
- Preferred vendors list used and different contract types used
- Fully integrated into organizational system
- Continuous improvement, preferred vendors leveraged

Q26. Solicitation / Source Control practice in your organization best approximated by a statement

- No process for vendor contact, evaluation, negotiation
- Quality and timing specified to vendor and Vendor submits plans
- Vendors to comply with project management processes and structure including detailed plans using WBS.
- Solicitation/ source control practice fully integrated into organizational system.
- Vendors evaluated and feedback to preferred vendor list

Q27. Contract Management / Closure practice in your company best approximated by a statement

- Vendors / contractors managed to end dates only
- Status plans and change control implemented
- Periodic reporting set and Vendor takes lead on communications
- Weekly status reports integrated into performance reports by Project Manager
- Strategic alliances with preferred vendors considered

Appendix B: Interview Questions

Dear Sir/Madam

First of all I appreciate for giving me your time to have this interview with me. I am Eyerusalem Moges, MA graduate student in Project Management at AAUSC. The main purpose of this interview is to collect data for the research entitled "Assessment of project maturity: a case study at Homa construction PLC. Therefore, I kindly request your cooperation and sincere response to the interview session.

1. Who has responsibility in project planning, execution, and control? And approved by whom?
2. Do you use all the scope management processes and apply to projects?
3. How is scope of project determined?
4. How is scope changed and controlled?
5. What type of tools/ techniques do you use for time management process?
6. What systems / tools do you currently use to manage your project cost? Is standard method practiced for resource planning, cost estimation and budgeting?
7. How are project costs assigned?
8. What method do you use for tracking costs?
9. Is there software based systems / tools that you currently use to manage your project quality?
10. What systems / tools do you currently use to plan HR management in your projects?
11. What kind of techniques and tools do you use to plan communications?
12. When is project risk analyzed?
13. What methods or tools do you use to manage and control risk?
14. Does the procurement department take lead on planning, requisitioning items?

Appendix C:

IMSI Project Management Assessment Model (IMSI, 2005)

	LEVEL1 NEEDS AWARENESS/ Ad Hoc, No Formal PM Process	**LEVEL2 ORGANIZED & DOCUMENTED/ Implementing a PM Methodology**	**LEVEL3 BOUGHT IN /INTEGRATED PM Practices used and adapted**	**LEVEL4 PORTFOLIO/PM Processes measured and controlled**	**LEVEL5 IMPROVEMENT/ Focusing on Process Improvement**
1. SCOPE					
Ensure that the project includes all the work required, and only the work required, to complete the project successfully.	Little/no scope management or documentation. Management aware of key milestones only.	Basic scope management process in place. Scope management techniques regularly applied on larger, more visible projects.	Full project management process documented and utilized by most projects. Stakeholders actively participating in scope decisions.	Project management processes used on all projects. Projects manage and evaluated in light of other projects.	Effectiveness and efficiency metrics drive project scope decisions by appropriate levels of management. Focus on high utilization of value.
2.Time					
Develop the project schedule, manage to that schedule, and ensure the project completes within the approved timeframe.	No established planning or scheduling standards. Lack of documentation makes it difficult to achieve repeatable project success.	Basic processes exist but not required for planning and scheduling. Standard scheduling approaches utilized for large, visible projects.	Time management processes documented and utilized by most projects. Organization wide integration includes inter project dependencies.	Time management utilizes historical data to forecast future performance. Management decisions based on efficiency and effectiveness metrics.	Improvement procedures utilized for time management processes. Lessons learned are examined and used to improve documented processes.
3.Cost					

Determine the total costs of the project, manage to those costs, and ensure the project completes within the approved budget.	No established practices or standards. Cost process documentation is ad hoc and individual project teams follow informal practices	Processes exist for cost estimating, reporting, and performance measurement. Cost management processes are used for large, visible projects.	Cost processes are organizational standard and utilized by most projects. Costs are fully integrated into project office resource library.	Cost planning and tracking integrated with Project Office, financial, and human resources systems. Standards tied to corporate processes	Lessons learned improve documented processes. Management actively uses efficiency and effectiveness metrics for decision-making
4. Quality					
Ensure the project satisfies all the needsfor which it was undertaken, and includesa focus on quality management from the perspective of product, processes, and the people needed to make quality an effective and efficient aspect ofsuccessful project completion	No established project quality practices or standards.Management is considering how they should define“quality.”	Basic organizational project quality policy has been adopted. Management encourages quality policy application on large, visibleprojects.	Quality process is well documented and anorganizational standard.Management involved inquality oversight for most projects.	All projects required to use quality planning standardprocesses. The Project Office coordinates quality standards and assurance.	The quality process includesguidelines for feeding improvements back into the process. Metrics are key to product quality decisions.
5. Risk					
Identify, analyze, respond, and control risk factors throughout the life of a project.	No established practices or standards in place. Documentation is minimal and results are not shared. Risk response is reactive.	Processes are documented and utilized for large projects. Management consistently involved with risks on large, visible projects.	Risk management processes are utilized for most projects. Metrics are used to support risk decisions at the project and the program levels.	Management is actively engaged in organization-wide risk management. Risk systems are fully integrated with time, cost, and resource systems.	Improvement processes are utilized to ensure projects are continually measured and managed against value-based performance metrics.

6. Human resource					
Identify the requisite skill sets required for specific project activities, to identify individuals who have those skill sets, and to assign roles and responsibilities for the project, managing and ensuring high productivity of those resources, and forecasting future resource needs.	No repeatable process applied to planning and staffing projects. Project teams are ad hoc. Human resource time and cost is not measured.	Repeatable process in place that defines how to plan and manage the human resources. Resource tracking for highly visible projects only.	Most projects follow established resource management process. Professional development program establishes project management career path.	Resource forecasts used for project planning and prioritization. Project team performance measured and integrated with career development.	Process engages teams to document project lessons learned. Improvements are incorporated into human resources management process.
7.Communications					
Manage the project data process from collection to categorization to dissemination to utilization and decisionmaking.	There is an ad hoc communications process in place where by projects are expected to provide informal status to management.	Basic process is established.Large, highly visible projects follow the process and provide progress reporting for triple constraints.	Active involvement by management for projectperformance reviews. Most projects are executing a formal project communications plan.	Communications management plan is required for all projects. Communications plans are integrated into corporate communications structure.	An improvement process is in place to continuously improve project communications management. Lessons learnedare captured and incorporated.
8.Procurement					

Acquire goods and services in support of the project. It also includes activities in managing the contract throughout the period of performance and closing the contract upon completion	No project procurement process in place. Methods are ad hoc. Contracts managed at a final delivery level.	Basic process documented for procurement of goods and services. Procurement process mostly utilized by large or highly visible projects.	Process an organizational standard and used by most projects. Project team and purchasing department integrated in the procurement process.	Make/buy decisions are made with an organizational perspective. Vendor is integrated into the organization's project management mechanisms.	Procurement process reviewed periodically. On-going process improvements focus on procurement efficiency and effective metrics.