ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

ASSESSMENT OF THE PRACTICES AND CHALLENGES OF THE IMPLEMENTATION OF ADDIS ABABA INTEGRATED HOUSING DEVELOPMENT PROGRAM: IN CASE OF 20/80 CONDOMINIUM HOUSE CONSTRUCTION IN ADDIS ABABA

BY

ALULA TEREFE DESTA

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A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ST. MARY'S UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ART IN PROJECT MANAGEMENT

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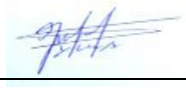
Yilkal Wassie (Asst.Pro)		26/06/2022
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DECLARATION

I the undersigned declare that this Thesis is my original work, prepared under the guidance of **Dr. Maru Shete.** All sources of materials used for this Thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

_____ _____

Name **Signature**

St. Mary's University College, Addis Ababa May, 2022

ENDORSEMENT

This thesis has been submitted to St. Mary's university, school of graduate studies for examination with my approval as a university advisor.

Maru Shete (PhD & Assoc. Prof.) _____

Advisor Signature

St. Mary's University, Addis Ababa May, 2022

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ABSTRACT

The main objective of this study is to identify why all the stakeholders are unable to deliver better quality houses, more job opportunity and slum reduction, while repeated Major and minor construction defects are observed in completed housing units and households are subject to unexpected maintenance costs, despite the Office's (AAHDPO) efforts to promote them, and to draw conclusions about what needs to be able to improve their capacity. This research involves both qualitative and quantitative approaches for data collection and analysis. To gather quantitative data, five survey questionnaires was administered to HDPO, contractors, MSEs, consultant and house occupants. For qualitative approach, in-depth interviews were carried out to purposefully selected respondents. In addition, observation was used. Lastly, data were collected from documents such as policy documents, reports and contract documents. The main activities in the research design are core problem identification, research objective to tackle the problem, operationalize the variables through intensive literature review, identify population, data collection and data analysis and conclude the research. The selected project site is Yeka Tafo and Goro Silasie, project -4. The findings concerning the support programs indicate that the office itself (HDPO) should have to change its culture that has been implemented with scientific practices, since the study indicated that the practices are in lack of proper management practice, quality control practice, lack of strict supervision, and lack of testing mechanism, lack of technical and managerial knowhow. In general improper implementation of project management knowledge area and project management tools and techniques. The study also aimed to identify major and minor defects in the newly constructed houses. The objective is addressed through research questions that are formulated to find out the effect of the capacity building schemes, to assess the practices and challenges of the implementation of the project (AAIHDP). Finally based on the findings the researcher recommends that special attention need to be given to HDPO, Consultants, small-scale contractors and MSEs in order to improve their capacity. In spite to this alternative construction materials of low-cost housing systems should be further studied to minimize the escalation of conventional construction materials. In addition, the whole construction management process should be improved then real cooperation between stakeholders, strict inspection of construction materials and inspection of works should be practiced, otherwise with this working culture the system might no longer fulfill the housing shortage in the near future.

Key Word: Practice of project management process, project management tools and technique, project management knowledge area, quality

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ACRONYMS

AACA	Addis Ababa City Administration
AAHA	Addis Ababa Housing Agency
AAHDPO	Addis Ababa Housing Development Project Office
AAIHDP	Addis Ababa Integrated Housing Development Program
AASHDE	Addis Ababa Saving Houses Development Enterprise
CBE	Commercial Bank of Ethiopia
CIB	Construction Industry Board
CSA	Central Statistical Authority
DEG	Deutsche Investitions- und Entwicklungsgesellschaft mbH, Cologne, Germany (Promoter of entrepreneurial development cooperation)
DFID	Department for International Development
DWCP	Decent Work Country Program
FDRE	Federal Democratic republic of Ethiopia
FIDIC	Federation Internationale des Ingenieurs Conseils‟ (International Federation of Consulting Engineers)
GDP	Gross Domestic Product
GTZ-IS	Deutsche Gesellschaft für Internationale Zusammenarbeit
HCB	Hollow Concrete Blocks
HDPO	Housing Development Project Office

IECEU	Improving the Effectiveness of EU Capabilities in Conflict Prevention
ILO	International Labour Organization
KFW	Kreditanstalt für Wiederaufbau, (German Reconstruction Credit Institute)
MDGs	Millennium Development Goals
MFIs	Micro Finance Institutions
MHE	Melese Hailu Engineering PLC.
MOWUD	Ministry of Works and Urban Development
MSME	Medium, Small and Micro Scale Enterprises
PERT	Program Evaluation and Review Technique
PMBOK	Project Management Body of Knowledge
PMTT	Project Management Tools and Techniques
SMEs/MSEs	Small and Micro Scale Enterprises/Micro and Small Scale Enterprises
SPSS	Statistical Package for Social Science
TVET	Technical Vocational Education Training
UN	United Nations
UNDP	United Nations Development Program
UN-HABITAT	United Nations Human Settlements Program

CHAPTER ONE:

INTRODUCTION

1.1. Background of the Study

The successfullness of any construction projects are mostly valued depends on the achievement of the main objectives of time, quality and cost. Implementation of effective project management and implimentation system has a great contribution to achieve those objectives. The task of implementing these systeme is the concern of all parties participated in the construction projects mainly client, consultants and contractors. Planned project duration, planned costs and project quality outputs are primary goal to a careful planning and checking process; these are the main elements of projects.

These are also inter related constraints, acting in such a way that if one of them is optimized, the remaining two are adversely affected by; in fact, if a compressed schedule is envisaged, costs will tend to increase and quality will tend to decrease. The best overall result can be achieved by a careful and balanced view of all the aforementioned project variables (Pica, 2015).

The core design of the Addis Ababa Integrated Housing Development Programme (AAIHDP) is the stakeholder analysis which is pre-examined carefully on its initiation stage. Whereas the major stakeholder involved in overall project management processes are:-

- HDPO (Housing Development Progect Office) is set to guarantee and facilitate the main three process in the whole programm that are the design, the construction and housing transfer.
- Consultants is one of the major stakholder whose engagements are design review, supervision of the construction process.
- Small scale contractors are the major contractors whome are responsible for the the main construction activities.

- MSEs (small and micro scale enterprises) are different organization whom are grouped to produce and deliver pre-fabricated building parts, installation of electrical and sanitary works and also production of metal doors and windows.

The project implementation of the AAIHDP is to tackle the high housing shortage and high uneployment (31%) (UN Habitat, 2008) in the city forced the Addis Ababa city administration to look for further solution, and in 2004 GC. (1996) in Ethiopian calendar, by State Minister Oqubay Arkebe has taken a full responsibility under the Ministry of Works and Urban Development (MOWUD) to lead, mitigate and address the housing and poverity problem by designing a strategic plan called the Addis Ababa Integrated Housing Development Programe (AAIHDP) focusing mainly to address for low and middle income households in Addis Ababa that has planned to construct about 50,000 housing units with in a year and from 2004 to 2009 about 150,000 up to 200,000 housing units are constructed, (AAHDPO, 2006).

Addis Ababa Integrated Housing Development Program was inaugurated after successful Completion of Bole Gerji pilot apartment construction conducted in the years 1999-2002 (in Ethiopian calendar). Low-cost housing project was established based on bilateral agreement between Ethiopian and German governments to provide technical, managerial and financial support. German Agency for Technical Cooperation- International Services (GTZ- IS) was delegated to support the program in technical and managerial aspects whereas KfW and DEG provided financial support (GTZ-IS, 2005). By using low cost technology, GTZ- IS in collaboration with the Ethiopian Ministry of Federal Affairs carried out the first pilot project in Addis Ababa. In this project, viable and technically sound construction solutions on the basis of pre-fabricated building elements were introduced.

A basis is derived from the Millennium Development Goal (MDGs) with the program aimed at decreasing poverty by 50%, decreasing slum by 50% on 2020 and provide access to sanitation. The specific objective is to construct 50,000 low cost housing units per year for low and middle income households, and to create employment opportunity to

the urban youth (estimated to create 40,000 jobs) and to employ 1500 MSEs (GTZ-IS, 2005).

During the initiation Addis Ababa IHDP has taken the responsibility to select new sites and to look for financial funds that are appropriate for the construction, also the full authority to be the managing agency, the extraction of funds from the city's budget to finance construction; the acquisition of bonds from the Commercial Bank of Ethiopia (CBE) to pay for all other factors including the infrastructure costs and design-team costs; and the compensation of all households displaced by inner-city renewal. The City Administration created the Housing Development Project Office (HDPO) specifically to manage the implementation of the housing program (UN-HABITAT, 2011).

The three outmost stakeholders during the pre-initiation time, for the well arrangement of the programm are:-

- City Administration created the Housing Development Project Office (HDPO) specifically to manage the implementation of the housing program.
- German Technical Corporation (GTZ), investigated the technology of prefabricated building materials needed to implement a low-cost housing program, through their bilateral program.
- MH Engineering (MHE), is a large Ethiopian architecture firm. The company, composed of 80 architects, civil engineers, structural engineers, electrical engineers, and quantity surveyors, was responsible for the concept design of the first condominium project in Ethiopia and a succession of 31 schemes thereafter, 13 of which were under the management of GTZ, and the remaining 18 under the management of the HDPO. The firm's initial designs for cost-efficient condominiums in Addis Ababa stemmed from their collaboration with the Low-Cost Housing Project at GTZ, where they introduced the Cost-Efficient Methodology (LCH-MH system) of utilizing pre-cast concrete elements in building design. MHE produced a manual that addressed the housing problems experienced by the country's low-income groups and offered their conceptual design solution as an open and accessible piece of work is explored.

The selected project site for this research is Yeka Tafo and Goro Silasie, both of them are under project four (4), Previously Bole Sub city, now Lemi Kura Sub city. The project started in May 2008, in this project the number of blocs are 148 which is about 8140 housing units that consist of, 824 studio; 3,578 One Bed Room; 2682 Two Bed Room; 1056 Three Bed Room type and about 242 housings to be ready for commercial purpose adjacent to the road side and the total projects progress accomplishment is 96.65 percent (HDPO, 2022),

1.2. Statement of the Problem

The biggest problems associated with most of the construction projects in the world todays is the problem of delay, defects and cost overunn, due to lack of practices on project management and project implimentation process at both pre-contract and post-contract stages of construction in building and civil engineering works.(Ahmed Tawfik, 2017)

The AAIHDP construction from its inception its scale is very big to the city and even to the administartion, because of its differnt types of benefits,for example its benefit towards delivery of houses, slum reduction and job opportunity, beside, many critics has been thrown for the last decades that the program is in lack of quality construction (low quality), delivery of houses on time, availability of financial institutions for settling the down payments are none, stakeholder involvement towards their task, land shortage and mismanagement.Commonly known concerns are quality and life span of the buildings; specialy the quality of structural parts, finishing works and infrastructure; UN-HABITAT in its 2011 reported out that management of specific issues like location, built environment design, and construction quality are unexpected challenges of the program. similar reports uttered that if not addressed properly, the mentioned challenges might jeopardize the long-term achievement of the program.

What makes this researcher interested in this title is, the establishment of Addis Ababa city government’s development plan that intends to construct 50,000 housing units annually and 150,000-200,000 housing units within the five-year period, from 2004 to 2009 (AAHDPO 2006). As of mid-2010, 80,257 housing units were built in different sub-

cities of Addis Ababa, as of today 221,000 housing units are constructed and transfered and about 66,000 housing units are under final stage of construction, and 30,000 housing units are planned to be complete up to 30% for the budget year 2020-2021 (HDPO). From the above data we can easily calculate the number of housing units that should be constructed todate are 560,000 while the executed housing units are only 287,000 and the accomplishment is about 51% from the strategic plan, which shows there is a huge scope variance.

Beside many critics has being raised about the quality and delays of the houses, some researches pointed out reservations for example:-

Hiwot Bahru Gemeda (September, 2012) tried to identify causes of poor performance which contribute to low quality housing in relation to physical aspects such as structural failure, wall cracking, and sanitary and electrical installation problems. Construction or design faults are the main factors, which contribute to low quality construction. Construction fault may be a result of poor workmanship, poor quality material, and lack of technical know-how, lack of commitment, lack of stakeholders‟ cooperation and etc.

While Biniam Haile (December, 2019) on his research tries to assess the factors influencing for timely completion of 40/60 housing project from project time management perspective. It tries to examine how the knowledge, methods, techniques, process and principles are effectively applied within the entire project management system of the client (owner), consultants and contractor.

Here the research tries to asssess those critics in relation with practices of project and project management process, project management knowlege areas, project management tools and techniques, and project implimentation.

Therefore, thats why my research focuses on the huge gap to assess on the practices and challenges of the implementation of AAIHDP, in relation with project management process and project implimentation, that can directly affect cost, quality and time.

1.3. Objectives of the Study

1.3.1. General Objective

The main objective of this research is to assess why all stakeholders are unable to deliver houses on time, good quality, and create more job opportunity as per the strategic plan, in relation with the practices of project and project management process, project management knowlege areas, project management tools and techniques, and project implimentation.

1.3.2. Specific Objectives

It has come to the researcher's attention to realize and complete the general objective mentioned above, the following specific objectives are become mandatory.

- To Assess the practice of implimenting quality management plan of AAIHDP.
- To oversee the practice of implimenting of time management plan of AAIHDP.
- To determine the practice of implimenting the scope management plan of AAIHDP.
- To evaluate the challenges of project implimentation of AAIHDP.

1.4. Research Questions

Since the main target of this research is to evaluate the long ran (15 years)of its journey, the AAIHDP with its implementation and challenges to achieve what has been planned in its strategic plan and what has been contributed either positively or negatively. Also as it has been mentioned on the statement of the problem, delivery of houses on time, quality defects, and job opportunity has been focused, in relation with project and project management process, project management knowledge areas, project management tools and techniques, and project implementation, moreover the following questions are addressed and lead to its outcomes.

1. What does the program; project management process, project implementation system and Project management knowledge areas like?

2. What mechanism does the program uses to evaluate and upgrade its accomplishment time to time?
3. What are the challenges repeatedly observed from the main stakeholders, HDPO, Consultants, Small-scale contractors and MSE's?
4. Does the program properly uses Time, Scope, Cost and Quality management plan?

1.5. Significance of the Study

As it has been mentioned clearly in the background and introductory part, solving the housing shortage, slum reduction and creating job opportunity was become mandatory for the city administration during the inception stage, thus it is gratefull to see many has possesed houses, many has a job oportunity and in some part of the city there created better housing system and minimized the slum areas.

Pointing out the major challenges in the programme might minimize the frictions that the HDPO has facing in order to implement its main objectives that has set by the city administration, since it has come to big scale, the programme significantly take a bigest share in the construction industry which has been intertained in the city either positively or negatively in related to its scope and the dynamics of the economy, because the countries biggest bank has been dragged and puts its share in the process. The city of Addis Ababa, after exclusively using its own budget during the first years, also started selling bonds to the CBE to finance the program, including construction costs. The Bank provides funding for the total cost of the program's implementation in Addis Ababa and in the regions, and not on a site-by-site basis (UN-HABITAT, 2011).

I hope that this research significantly increase awareness of the program and assess the practice and its major challenges to implement the program. Then, if corrective measures are intensively took place by the responsible administration, it ensures sustainability of the program in providing quality low cost houses in Addis Ababa. Moreover, this study could also contribute solutions to similar undergoing programs in the country as a whole. The result of the study also projected to be positive, but if not then, another study might be needed to survey possible sources of defects in construction of condominium houses.

1.6. Scope and Limitation

There are many limitations on this research. Firstly, the research population is too large to cover in the limited time given thus sampling is compulsory which might have an impact on the general output of the study. Secondly, since the program is politically motivated some officials are not cooperative to give detail information and that makes the research difficult to get involved in Thirdly, Following the 2018 an un-expected change in Ethiopia's politics, many higher officials, top managers, middle level managers and lower level managers has dramatically either replaced or shifted, this replacement has also been implemented in the Addis Ababa city administration, the human resource replacement or shifts has been found difficult to found an abundant information from the new personnel, due to this and some regional conflict raised by Oromia Region and Addis Ababa city, it is scary to move freely in some sites of condominium projects.

1.7. Organization of the Study

This research is organized in to five chapters. The first chapter is the introduction part. The second chapter presents the literature review, the third chapter consists of the research methodology, the fourth chapter presents data presentation, analysis, and discussion while the fifth chapter describes summary, conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical Literature Review

2.1.1. Project and Project Management

Turner (1998) defined a project as, 'Endeavour in which human (or machine), material and financial resources are organized in a novel way, to undertake a unique scope of work, or given specification, within constraints of cost and time, so as to deliver beneficial change by quantitative and qualitative objectives.' According to Turner (1998), project-based management includes five functions: organization, scope, time, quality and cost. Kerzner argues that 'a project is any series of activities and tasks that have a specific objective to be completed within certain specifications; have a defined start and end date; have funding limits; consume money, people and equipment; and are multifunctional.' Andersen understands projects from an organizational perspective, as 'A project is a temporary organization, established by its base organization to carry out an assignment on its behalf.'

According to Hyttinen (2017) as a term, project management first appeared in 1953 in the US defense-aerospace sector. Today, project management can be seen as a professional discipline with its own body of knowledge and skills. Project management expertise can benefit any kind of organization. In order to focus on how projects contribute to the strategic goals of an organization, a holistic, integrative view of project management provides the most value. This view should also include the process of selecting projects that can provide the best support for a particular organization's strategy. Moreover, several project management models exist. A simple project management model created by Mike Bell includes five key elements: scope, inputs, project, risks and outputs. The scope sets the boundaries for the project implementation. Inputs should be made based on the needs. The project is broken into five phases: initiation, planning, approval, delivery

and closure. The outputs focus on what will be delivered and are split into outputs and outcomes.

According to Belout, a project's results are influenced by managing people. In 2002, Cooke-Davies observed that 'it is people who deliver projects, not processes or systems.' Also, in 2005 it was indicated that project success or failure is based on the people involved in the project. The change from project management tools and techniques towards the social and behavioral aspects of the management of projects has been increasing in recent years. Also, most projects are research and development-oriented. This means that the projects aim to develop activities, provide recommendations and lead towards change. The willingness of employees and managers to accept the changes and recommendations provided by the projects is as important as other topics related to project management.

According to Svejvig and Andersen's (2015) latest literature search, six different project management categories have been defined: 'contextualization (expanding the project concept to encompass elements such as environment and organizational strategy), social and political aspects, rethinking practice (alternative methods), complexity and uncertainty, the actuality of projects (how projects are actually carried out), and broader conceptualization.'

Without a project management method, all project actors have different ideas about how things should be organized and when the different aspects of the project should be completed. According to Prince, Project Management methodology '…project failures are all too common. The reasons for failure are wide and varied. Some common causes are: Lack of coordination of resources and activities; lack of communication with interested parties; poor estimation of duration and costs; insufficient measurables; inadequate planning of resources, activities, and scheduling; lack of control over progress; lack of quality control, resulting in the delivery of products that are unacceptable or unusable.'

The majority of project management literature has not focused specifically on project managers' perspectives. The latest research conducted by Andersen showed that project

managers see their assignments differently. This naturally leads to a situation where better and clearer recommendations on which project management methods are used in project implementation. The overall understanding of a good project management method will support the project to achieve the desired results. The key features defined in this deliverable regarding project management are: the project management cycle, knowledge management, the work breakdown structure (WBS), and project organization structure.

2.1.2. Project Management knowledge Areas

The project management knowledge areas are essentially, what we need to know about effective project management, the project management knowledge areas found in A Guide to the Project Management Body of Knowledge (PMBOK Guide: 2021). There are 5 phases and 10 knowledge areas.

According to (PMBOK Guide: 2021) the 10 knowledge areas are highly inter related with the following phases.

1. **Initiation Phase** – Start of the process with developing the initial report and identifying the stakeholders
2. **Planning Phase** – Planning of the project by preparation of the management plan, scope, etc.
3. **Execution Phase** – Execution of the project as per planned management data across all the knowledge areas.
4. **Monitoring and Controlling Phase** – Monitoring & Controlling of the project as per the planned progress.
5. **Closing Phase** – Handover of the project to the customer after the final sign off!

According to (PMBOK Guide: 2021) The 10 Knowledge Areas that have been defined in project management. The details are presented in Table 2.1 below.

Table 1.1: IECEU knowledge management areas

Knowledge Management Area	Operationalization in Project Management
Project Integration Management	**Project Management Level:** Each beneficiary: integration with partner strategies by each beneficiary **End User Community Level**: integration with relevant training, education, research and at the policy level
Project Scope Management	**Project Management Level:** Each beneficiary: respond to internal objectives and goals and situational awareness picture **End User Community**: Defining the end user needs, key challenges and threats in collaboration
Project Time Management	**Project Management Level:** PMO: overall situation picture, Each beneficiary: time management (timesheets, work allocation) **End User Community:** Introduction of the key findings in order to support planning and decision-making
Project Cost Management	**Project Management Level:** PMO: overall situation picture, Each beneficiary: cost management (PMs, travels and other costs)
Project Quality Management	**Project Management Level:** Quality Manager: overall situation and processes, Each beneficiary: implementation of the tasks **End User Community**: External board and committee validations and assessments
Project Human Resources Management	**Project Management Level:** Each beneficiary: responsibilities by expertise areas, continuous learning and development **End User Community:** Participation to external boards and committees based on expertise
Project Communications Management	**Project Management Level:** PMO and responsible WP: establishment and implementation of communication **End User Community:** Information sharing by selected communication means
Project Risk Management	**Project Management Level:** PMO: Overall risk management and update processes, Each beneficiary: defining, updating risks and risk mitigation plans **End User Community:** External board and committees: support with updates on risks and mitigation plans

Knowledge Management Area	Operationalization in Project Management
Project Procurement Management	**Project Management Level:** PMO: overall lead of procurement management Each beneficiary: subcontracting procurement processes **End User Community:** Subcontracting if needed
Project Stakeholder Management	**Project Management Level:** identification of possible stakeholders to be part of the project and they are classified as internal and external. In the planning phase. planning the rights of the stakeholders and their roles are set up as per their engagement. In Executing phase, stakeholder engagement is managed, and any issues are ironed out with regular communication channel. In Managing & Controlling phase, controlling the engagement before the sign off is done and ensuring the smooth acceptance of the deliverables.

Source:- IECEU

2.1.3. Project Management Tools and Techniques

The definitions of tool and technique provided by Merriam-Webster's collegiate dictionary (1996) are as follows. Tool is defined as something (as an instrument or apparatus) used in performing an operation or necessary in the practice of a vocation or profession (Merriam-Webster Inc., 1996). Technique is defined as a method of accomplishing a desired aim (Merriam-Webster Inc., 1996). In this context, PMTT mean systematic procedures or practices that are used for producing specific project management deliverables (Milosevic, 2003).

Many authors agree that the use of PMTT in general has impacts on project success (Might and Fischer, 1985; Milosevic, Inman, and Ozbay, 2001). Toney and Powers (1997) discuss potential benefits of an appropriate use of PMTT as follows: increase efficiency, reduce training, improve project predictability, increase stakeholder confidence, increase probability of project success, and improve communication. Additionally, they also suggest that project managers should have adequate knowledge of and experience in the use of PMTT as a requirement. A study by Might and Fischer (1985) shows that if project managers select which PMTT to use in managing projects by

themselves, it will lead to a better chance of having successful projects. Kerzner (2000) notes that one of the weaknesses in implementing project management is the lack of focus on PMTT. Nicholas (1990) mentions that one reason for project failure is an inappropriate use or misuse of PMTT. Some field studies show that an inappropriate use of schedule/budget tracking and control tools and techniques can be counterproductive to overall project performance (Cash and Fox, 1992; Hatfield, 1995; Thamhain, 1996).

Some of the most noteworthy project management techniques that are commonly used in the industry are:- Classic technique, Waterfall technique, Agile Project Management, Rational Unified Process (RUP), Program Evaluation and Review Technique (PERT), Critical Path Technique, Critical Chain Technique and Extreme Project Management (XPM).

2.1.4. What does Low Cost Housing Mean?

Construction costs in Ethiopia are increasing dramatically, due to inflation rates getting into double a digit which is amounted to about 25.35 percent in 2020, (Aaron O'Neille et al, 2020). According to Trading Economics, Ethiopia's annual inflation rate inched down to 34.5 percent in January 2022.The construction costs have registered a similar increase, primarily due to cost of basic building materials such as steel, cement, bricks, timber and other inputs as well as cost of labor. As a result, the cost of construction using conventional building materials is beyond the affordability of the economically weak and low-income groups of population as well as a large cross section of the middle - income groups.

Low cost housing can be considered affordable for low- and moderate-income earners if household can acquire a housing unit (owned or rented) for an amount up to 30 percent of its household income (Miles, 2000). In developing countries such as India, only 20% of the populations are high-income earners, who are able to afford normal housing units. The low-income groups in developing countries are generally unable to access the housing market. Cost effective housing is a relative concept and has more to do with budgeting and seeks to reduce construction cost through better management, appropriate use of local materials, skills and technology but without sacrificing the performance and

structure life (Tiwari et al., 1999). It should be noted that low cost housings are not houses which constructed by cheap building materials of substandard quality. A low cost house is designed and constructed as any other house with regard to foundation, structure and strength. The reduction in cost is achieved through effective utilization of locally available building materials and techniques that are durable, economical, accepted by users and not requiring costly maintenance (Miles, 2000).

Low cost housing is a new concept which deals with effective budgeting and following of techniques which help reducing construction cost through the use of locally available materials along with improved skills and technologies without sacrificing the strength, performance and life of the structure (Kumar, 1999; Civil Engineering Portal, 2008). Low cost housing technologies aim to cut down construction cost by using alternatives to the conventional methods and inputs. It is about the usage of local and indigenous building materials, local skills, energy saver and environment-friendly options.

Low cost or affordable construction technologies and materials are often touted as a panacea in meeting the ever growing demand for rapid housing delivery in developing economies (Kuchena and JC Usiri, 2009).

According to WBDG Cost-Effective Committee (Whole Building Design Guide) 2020, “Every owner wants a cost-effective building. But what does this mean? In many respects the interpretation is influenced by an individual's interests and objectives, and how they define "cost-effective".

- Is it the lowest first-cost structure that meets the program?
- Is it the design with the lowest operating and maintenance costs?
- Is it the building with the longest life span?
- Is it the facility in which users are most productive?
- Is it the building that offers the greatest long-term value or return on investment?

According to Moavenzadeh (1987) for instance suggested that certain standards could be forgone during low cost housing construction, as using high-grade building material may not be appropriate in local context. Requirement for imported goods and skilled workers,

substitution of materials that meets the specification and reduction of design requirement are among the suggested actions that can change. Besides, as standards become more reasonable, small-scale firms found in a better position to satisfy them.

2.1.5. Quality Practices in Building Projects

Although a significant amount of quality practices has been introduced within the industry, attainment of reasonable levels of quality in construction projects continues to be an on-going problem" (Heravitorbati et al. 2011).

Some researchers like Arditi & Gunaydin (1997) use the term quality instead of project performance to indicate the effect. Quality project refers to a project, which is completed on time within budget and meets its functional requirement (Arditi & Gunaydin 1997).

What is quality? Vincent & Joel (1995) define quality as the integration of all functions and processes to achieve continuous improvement of the quality of goods and services to meet customer satisfaction. According to Arditi & Gunaydin (1997), quality is meeting the requirements of the stakeholders: designer, contractor and regulatory agencies as well as the owner. To ensure project quality implementation of a Total Quality Management System (TQMS) is necessary. TQMS is an effort that involves every organization in the industry to improve performance and focus on process improvement, customer and supplier involvement, teamwork, education and training to achieve customer satisfaction defect free work (Meng 2011). The system is also defined as being prescribed quality objective of the company (Oztas et al. 2005).

There are two widely used terms in TQMS namely Quality Assurance (QA) that covers activities necessary to provide quality in project work and Quality Control (QC) that is set of procedure to meet QA. The activities in QA involve establishing project related policy, system necessary to produce quality, standards, training and guidelines whereas the procedures in QC involve planning, coordinating, developing, checking, reviewing and scheduling of work (Arditi & Gunaydin 1997). The training in QA includes instruction in the basic TQM cause and effect analysis, team problem solving,

interpersonal communication and interaction and cost of quality measurement (Arditi & Gunaydin 1997).

Several definitions of quality already exist. *In Juran's Quality Handbook, 5th edition*, quality pioneer Joseph M. Juran states that quality has two meanings that are critically important to its management. Quality means "features of products which meet customer needs and thereby provide customer satisfaction." Quality improvement related to features usually costs more. Quality also means "freedom from deficiencies." These deficiencies are errors that require rework (doing something over again) or result in failures after a product has been delivered to a customer. Such failures may result in claims, customer dissatisfaction, or dire consequences to the user. Quality improvement related to deficiencies usually costs less. Juran's view considers products, defects, and customers. From Project Quality Management by Kenneth H. Rose, *PMP*

The Project Management Institute defines quality as "the degree to which a set of inherent characteristics fulfill requirements." This definition is taken directly from ISO 9000:2000, published by the International Organization for Standardization.

Therefore, beside many goods it brought to the city, effective relationship among stakeholders and involving stakeholders in planning and practice has immense help in solving quality failure, (Wang & Huang 2006 and Heravitorbati).

2.2. Empirical Literature Review

2.2.1. Practice of Project Management

Project management practices are gaining increasing visibility and importance to organizations (Badewi, 2016; Kwak & Anbari, 2009; Zhai, Xin, & Cheng, 2009); however, project management remains a highly problematical endeavor (Mir & Pinnington, 2014). The Standish Group International's Chaos Manifesto 2015 shows that in the information and technology (IT) sector of activity, in 2015, only 29% of all the projects surveyed succeeded (i.e., were delivered on time, on budget, and with the required features and functions); 52% were challenged (late, over budget, and/or with less

than the required features and functions); and 19% failed (canceled prior to completion or delivered and never used). Nevertheless, these results show an increase in project success rates since 2008, when the success rate was only 32%, highlighting the importance of applying better project management practices (The Standish Group, 2015).

According to Kerzner (2015), the use of the best project management practices leads to added business value, greater benefit realization, and better benefit management activities. Project management practices are required to ensure project success (Badewi, 2016). Several studies have been conducted to demonstrate the value of project management (Joslin & Müller, 2015; Lappe & Spang, 2014; Mir & Pinnington, 2014; Thomas & Mullaly, 2008; Zhai et al., 2009). Several authors have shown that project management delivers several tangible and intangible benefits to organizations—for example, tangible benefits, such as better financial ratio of return on investment (Ibbs & Kwak, 2000), and intangible benefits, such as corporate culture, organization efficiency, and client satisfaction (Andersen & Vaagaasar, 2009; Eskerod & Riis, 2009; Mengel, Cowan-Sahadath, & Follert, 2009).

The project management paradigm is surprisingly well defined through generic bodies of knowledge, project management is highly contingent on the organizational context, such as the structure of the business or sector, the size, and the organization environment (Besner & Hobbs, 2008, 2012a, 2012b; Cooke-Davies, Crawford, & Lechler, 2009; Hobbs, Aubry, & Thuillier, 2008; Zwikael, 2009). However, the PMBOK® Guide, for example, recognized that "'Good practice' does not mean that the knowledge described should always be applied uniformly to all projects" (Project Management Institute, 2017, p. 28); the organization and/or project management team is responsible for determining what is appropriate for any given project.

Recently, Fernandes, Ward, and Araújo (2013) conducted similar research, but instead of the most used project management practices, they studied the most useful project management practices-that is, the project management practices that have a high level of benefit to project management performance. Project management performance is focused on the triple constraints: control of time, cost, and progress of the project (Jha & Iyer,

2007). The decision of this study to focus on the most used practices and not the most useful is related to the fact that it is more difficult for practitioners to evaluate the usefulness of a project management practice than its extent of use.

On April 16, 2016 an earthquake of 7.8 degrees of intensity on the Richter scale had its epicenter on the offshore of the west coast of northern Ecuador approximately 40 Km from the town of Pedernales, Ecuador leaving 663 killed people and 6274 injured. It is estimated that about 5956 buildings collapsed during the earthquake. There were several causes that led to the collapse of infrastructures in Pedernales; one of them is informal construction. At the Coast of Ecuador, the quality of materials used in construction is often very poor. Poor construction practices such as using any type of water may introduce mineral salts, which are harmful for the concrete mix. Similarly, it was clear that many of the buildings that collapsed had concrete made with sea sand, which is high sodium chloride content and could induce to corrosion of the steel reinforcement (Filián and Montero, 2016).

2.2.2 Challenges of Project Management Implementation

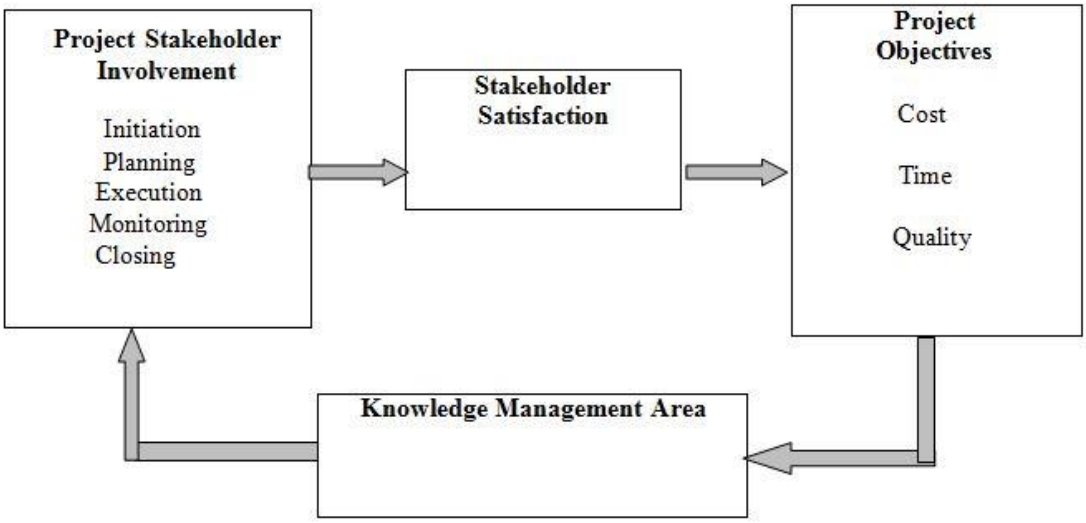
The relevance of management theories management practice is a topic of frequent debate in management journals and throughout conferences. Over the last couple of years, some topical contributions have been made by authors such as, Ghoshal (2005), and Mintzberg (2003) with a common theme concerning the shortcomings of management models and management theories in terms of understanding (and guiding) management practice.

Ghoshal (2005), by claiming that bad management theories destroy what otherwise would have been good practice, is perhaps the most outspoken of these critics. Management theories are, he claims, too scientific and rational. In addition to disregarding the importance of human interaction, they are also based on deductive reasoning, biased assumptions, and partial analysis. All in all, management models are claimed to be irrelevant descriptions of what is really going on in organizations and not a sound and solid foundation on which management action should be based.

According (Yardley 2002) there are different reasons for projects to fail. Among this poor project planning is one of the most common one in projects. So the planning practices of the projects should be improved and be systematized so that all projects can be successful.

According to the research paper by (Yu-Ren and Edward 2008) well prepared project plan have an impact on the success of the projects. Many developing countries in the world are affected by poor planning in projects. Weakness in planning and implementation has been identified as one of the main reasons for the disappointing results of projects in Africa (Moradat, Merrery, Seshoka and Sally 2005)

Figure 2.1 Theoretical Framework



Source:- Adopted from Abbas Mardani, 2012

2.3. Knowledge Gap

The studies that has been made on proper accomplishment of the project is tries to focus on its out put of construction part that is the physical aspect of it, neverthless my research tries to view and proof that the space is created b/n the goal set by the administration and the actual executed works which clearly tabulated in the statment of the problem, whether it might be over scoped or under execution.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

This chapter elaborates the research strategy and type that used to collect the necessary information that helps the paper answering the research questions, it describes, the research design and approach, presents data collecting method, operationalization, variables and indicators, the study population and sampling, the research designand its validity and reliabillity of the research paper.

3.2. Research Design and Approach

This research uses Mixed method for data collection and analysis. To obtain quantitative data, the research uses collecting from contractors, client, consultant and residents of housing winners.

For qualitative approach the datas hase been gathered from different sources such as manuals, documents, reports and books academic journals.

For the quantitative approach the analysis helps to determine on what extent there is a relationship between two or more variables. In other words, how the factors contribute to the proper accomplishment of the project. In addition, a representative sample of the wider population/group has been used. The research intended to make inferences from the larger groups by taking sampling. The type of research employed under this study was evaluation research technique, which explained the fundamental relationship between independent and dependent variables.

3.3. The Study Population and Sample

Having the purposive sampling technique, a project for the research was selected according to the following criteria: a finilized project handed over to the occupants and the other an active project. This helps to take the research samples from a specific

project. Accordingly occupants who lives in the handded over houses and contractors and MSEs who participated in the final stage and now working on the on-going projects were selected as primary respondents. All HDPO officials and one of the consultants who are currently working on the project and selected as another set of respondents were also part of the previous project.

The population consist of small-scale contractors and MSEs who engage in construction work, the consultants who are responsible for supervision of the whole of the work, HDPO officials who are responsible for training and capacity building and at last the occupants who are living in the handed over houses.

Drawing a sample from the occupants was not an easy task because of its big size of population. Yet, a large size sampling approximately 200 respondents are selected to ensure representativeness of the sample. To execute the data collection employing of research assistance was necessary. Therefore, one-research assistances were engaged in this data collection.

The sample size of the study is determined based on the following simplified formula proposed by (Yamane 1997), as cited in (Ahimed Ali: 2011) by considering the above size of population:

$$n = \frac{N}{1 + \text{N (e2)}}$$

When, n is sample size, N is the population size and e is the level of precision. A 95% confidence level and e = 0.05, is assumed for the purpose of determining sample size for this study. Accordingly, the sample size for the study is calculated as follows.

N=200

n=200/1+200 (0.05^2) = 133

Therefore, the sample size of this study conducted was 133 that are directly related with the projects, including a key informant interview is conducted on a purposively selected 4 for Small-scale contractors staff, 3 interview for consultants staff, 3 Interviews for MSE's

staff and 5 interviews for occupants or owners. Respondents are diversified in terms of educational qualification, job positions and other parameters. Thus, stratified sampling method is applied to avoid such heterogeneity of the population.

Table 3.1: Data Sources and Data Collection Strategy

Item No.	Type of respondents	Sample size	Sampling technique	Data type	Data collection	Method Research Instrument
1	Small-scale contractors	28	Purposive-Random	Primary	Survey	Questionnaire
		4	Purposive-Random	Primary	In-depth interview	Interview
2	Consultant	11	Purposive	Primary	Survey	Questionnaire
		3	Purposive	Primary	In-depth interview	Interview
3	HDPO	13	Purposive	Primary	In-depth interview	Questionnaire
		3	Purposive	Secondary	Documentary analysis	Document review checklist
4	SME's	20	Purposive-Random	Primary	Survey	Questionnaire
		3	Purposive-Random	Primary	In-depth interview	Interview
5	Occupants/ Owners/	43	Purposive-Random	Primary	Interview-observation	Questionnaire
		5	Purposive	Primary		Interview
Total		**133**				

3.4. Validity and Reliability

To ensure the validity and reliability of the research, variables are widely cleared. This also helps to condense misunderstandings as a result it increase the reliability of the measuring instruments. Moreover, triangulation of results engaged to ensure reliability of

the data collected. Thus, all the data obtained from different sources compared and cross-checked.

Moreover, to ensure reliability of the data, the questionnaires were tested prior to distribute to the intended respondents. The questions then amended based on the comment collected from those who participated in the test. The validity of the data is also acquired through careful selection and use of appropriate size of the sample to avoid misunderstandings,

The reliability test depicts the consistency degree of the data collected. The data collected (total respondents and contributing factors) in this study was analyzed with SPSS version 20 to calculate the value of Cronbach's alpha of the survey results.

Some past studies carried out by Memon et al. (2010), Enshassi et al. (2009) and Abdullah et al. (2010) also chose to use the Cronbach α to calculate the accuracy of the data obtained. Cronbach α value can be calculated as:

$$\text{Cronbach } \alpha = \left(\frac{k}{(k-1)}\right) \times \left[1 - \frac{\sum(s^2_i)}{s^2_{sum}}\right]$$

Where s^2i is the Variance for the current sample of respondents; k is the total number of contributing factors and s^2 sum is the variance for the sum of all respondents. Ideally, Cronbach's α should be greater than 0.9, but anything above 0.7 is considered acceptable for most research purposes (Allen and Bennett, 2010). The table indicates below enforces the above assumptions.

Table 3.2. Cronbach's Alpha Result for HDPO

Cronbach's Alpha	Item
0.798	26

Table 3.3. Cronbach's Alpha Result for Consultant

Cronbach's Alpha	Item
0.766	26

Table 3.4. Cronbach's Alpha Result for Contractor

Cronbach's Alpha	Item
0.812	47

Table 3.5. Cronbach's Alpha Result for SME's

Cronbach's Alpha	Item
0.784	27

Table 3.6. Cronbach's Alpha Result for Owners/ Occupants

Cronbach's Alpha	Item
0.812	22

3.5. Data Analysis Method

The collected data analyzed by using SPSS computer program for qualitative and quantitative data respectively. This computer program will help me to reduce the occurrence of error during data analysis. Besides, it was fast and more accurate.

Descriptive statistics such as standard deviation, mean, frequency and percentage is used to analyze the data that is obtained from the questionnaire and the secondary sources. Descriptive statistics provides a summary of the main features of a set of data collected from a sample of participants.

3.6. Operationalization, Variables and Indicators

The research emphesizing that evaluating to poor quality, reduction of unemployeemnt and slum reduction sucessfullness, and what contributes to those effect by examinning the relationship dependant variable ‘’quality achievments’’, and independant variables derived from the litrature review, like modern project management systems such as the five project life cycles (Project Initiation or inception, Project planning and defination, Project execution, Project performance and Project closeout, and the six functions of project management, (Cost Managemen, Time Management, Quality Management, Contract Administration, Safety Management, Conclusion)

Table 3.7: Operationalization variables and indicators, by the research

Operationalization	Variables	Indicators
mechanism the office uses to evaluate and upgrade its accomplishment time to time.	Project Integration Management	Poor relationship and collaborating Reduced subcontractor responsibility Poor quality procedure and department Lack of process improvement Lack of management, commitment Lack of quality policy Low effective project management system Bureaucracy supplier impact
		Low quality drawing and specification Design complexity Difficult data collection system Poor performance of quality tools Lack quality management Lack of technical talent Difficult application of quality s
the ultimate goal to achieve the housing problem	Project Scope Management	Project size and complexity Poor quality and unavailability of resource Project environment Equipment idleness and unavailability Material/Equipment specification
the programm meet its target to	Project Time Management	Lack of collaborative working atmosphere

overcome housing shortage		Not being customer oriented and focused Emphasis on production and project duration Corruption
	Project Cost Management	Skill (technical and managerial) Financial
the programm considered to deliver quality houses	Project Quality Management	Capacity building programs mechanisms Training system
the program creates job opportunity as per its plan	Project Human Resources Management	Capacity building programs
Challenges that are repeatedly observed from the main stakeholders, HDPO, Consultants, Small-scale contractors and MSE's.	Project Communications Management	Skill (technical and managerial)
	Project Risk Management	Wall cracks Mal-functioning of sanitary installation Mal-functioning of electricity fixtures Maintenance requirement
	Project Procurement Management	Contractor selection
		Meet stakeholder requirement
challenges are repeatedly observed from the main stakeholders, HDPO, Consultants, Small-scale contractors and MSE's	Project Stakeholder Management	Meet stakeholder requirement

Source:- by the research Survey

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

This chapter comprises of data presentation, the results and analysis of the findings, the primary goal of the study was on the Assessment of the Practices and Challenges of the Implementation of AAIHDP in case of 20/80 condominium house construction in Addis Ababa. Therefore, this chapter presents the analysis of responses that was collected via questionnaires and interviews that was distributed to professionals of the five main project stakeholders namely client, consultants, contractors SME's and Owners/ Occupants.

Therefore, in this chapter, the data collected from respondents were analyzed and interpreted using quantitative analysis which involves analysis of the background information of respondents and the descriptive as well as inferential statistics employed to test the influence of independent variables on the dependent variable.

A total of 115 (excluding 15 interview and 3 document review) questionnaires were personally handed to the respondents with close follow up and guidance. Out of the total questionnaire respondents, 106 respondents completed the questionnaires in suitable form.

Table 4.1: Questionnaire Response Rate

Contractual Parties	Questionnaire Distributed	Questionnaie Collected	Response Rate
HDPO	13	13	100 %
Consultant	11	11	100 %
Contractor	28	26	92.85 %
SME's	20	18	90 %
Owner/ Occupants	43	38	88.37 %
Total	**115**	**106**	

Source: research Survey, computed in SPSS

4.1. Characteristics of Respondents

The questionnaire included a segment on respondent's background information as Assessment of the Practices and Challenges of the Implementation of AAIHDP in case of 20/80 condominium house construction in Addis Ababa. The background information about the respondents is described below in the following table.

Table 4.2: Frequency and Percentage on Background of Respondents

No.	Background Information		Frequency	Percentage
1	Sex	Male	63	59.4
		Female	43	40.6
		Total	**106**	**100**
2	Age	Below 25	14	13
		25-30	30	28
		30-40	37	35
		Above 40	25	24
		Total	**106**	**100**
3	Education level	Secondary Education	8	7.6
		Vocational Training	8	7.6
		Diploma	27	25.4
		Degree	42	39.6
		Master degree	20	18.9
		Above Master degree	1	0.94
		Total	**106**	**100**
4	Work Experience	Below 5 years	25	20.3
		5-10 Years	33	26.8
		10-15 Years	49	39.8
		Above 15 years	16	13
		Total	**106**	**100**
5	Employment type of respondent	HDPO/Client	16	13
		Consultant	14	11.4
		Contractor	30	24.4
		SME's	21	17.1
		Owner/Occupants	42	34.1
		Total	**106**	***100***

Source: research Survey, computed in SPSS

As the data indicates in the above table, the respondents were mostly in the age group of 25-30 and 30-40 years, which covers 63% of the total respondents. The gender distribution is also covers 59.41% for male and 40.6% for female and the respondents were predominantly degree and Diploma holders which cover 25.4 % and 39.6% respectively, while 18.9% of the respondents are Master degree holders, whereas 7.6% for both secondary level education and vocational training, also above masters degree take very less share in the research population which covers only 0.94%.

On the work experience of the respondents the highest range was from 10-15 years, which cover 39.8% of the total, while 26.8% of the respondents had found in the experience ranges from 5-10 years followed by 20.3% of the respondents had found in the work experience ranges from below 5 years. Whereas respondents scored more than 15 years cover 13%.

It is found mandatory to emphasize that all respondent's information could play a key role on the Practices and Challenges of the Implementation of AAIHDP, the following explanation about each stakeholder assessment will give a justifiable reason. Concerning the gender distribution, involvement of females in the project is not satisfactory. The fact that improving women participation in the construction industry could contributes for project efficiency and increase proper project implementation, since women are sensitive for quality, time management and accountability. Therefore, the gender distribution has an impact on the Practices and Challenges of the Implementation of AAIHDP project.

Age also plays an important role in the implementation of projects with the objective to complete a project on specified time. It directly relate with individual's capacity work efficiency. Age plays a critical role in understanding how people of different ages view the implementation of projects, to a larger extent an older employee is more experienced and is likely to relate issues more directly than relatively younger employees, while the younger employees are perceived to be more receptive to new technologies in the work place. It was also meant to determine whether the respondents were young, mature or old (Murithi, et al., 2017).

Based on the above data most of the professionals involved in the 20/80 housing project are relatively young. Despite the young work force is the productive force and receptive to new technology the age level by itself limit the young professionals to deal problems in a matured way due to lack of accumulated skills acquired through practical application of knowledge that could be developed through experience. Therefore, from this point of view, age can be a factor, to easily understand and be part of the solution of the Practices and Challenges of the Implementation of AAIHDP. Hence, unless the balance should be kept in the age distribution there will no improvement on the projects.

Respondents with longer period of service are more experienced and are in a position to explain processes and activities involved in project implementation. They have adequate and enough working experience and are in a better position to understand the organizations activities well. (Murithi, et al., 2017).

Since education is important in the practice and implementation of the project, as it known the level of theoretical concepts exposure for the respondents that may directly influence on the efficiency. Based on the above data the majority of professionals from all the three main stakeholders namely client, consultant, contractors and SME's on project are first-degree holders, followed by Diploma and Master Degree holders. This shows that, the involvement of highly qualified professionals has a positive impact on the proper accomplishment the work.

Based on the above data the highest rate of professionals' work force experience ranges was from 10-15, that indicates experienced work forces are on board and it can be considered as satisfactory but also counting years could not meet the criteria for being skilled here the judgment shall come after due observation of the outcomes of the projects.

All the stakeholder included in the respondents background information of the employment type are (HDPO, consultant, contractor, SME's and Owners/Occupants) can positively contribute to improve the practices and challenges repeatedly occurs.

4.2. Application of the Concept of Project Cycle in AAIHP Phases, Via HDPO

Table 4.3: Mean and Standard Deviations on the Project Cycle

Variables	N	Mean	Standard Deviation
There is awareness of project Initiation.	13	3.97	1.12
There is awareness of project Planning.	13	2.97	0.875
There is awareness of project Execution Plan.	13	2.89	0.919
There is awareness of project Monitoring and Controlling Plan.	13	2.98	0.655
There is awareness of project Closing and Controlling Plan.	13	3.75	0.785

Own Survey, computed in SPSS

4.3. Application of the project management knowledge areas in AAIHP, Via HDPO

Table 4.4: Mean and Standard Deviations on Project Management Knowledge Areas

Variables	N	Mean	Standard Deviation
There is proper Project Integration Management plan.	13	4.2	1.183
There is proper Project Scope Management plan.	13	3.24	0.964
There is proper Project Time Management.	13	2.84	0.892
There is proper Project Cost Management plan.	13	3.68	0.906
There is proper Project Quality Management plan.	13	2.81	0.981
There is proper Project Human Resources Management plan.	13	4.80	0.984
There is proper Project Communications Management plan.	13	3.19	0.655
There is proper Project Risk Management plan.	13	3.06	1.063
There is proper Project Procurement Management plan.	13	3.19	0.834
There is proper Project Stakeholder Management plan.	13	3.06	0.854

Own Survey, computed in SPSS

4.4. Application of Project Management Tools and Techniques, Via. HDPO

Table 4.5: Mean and Standard deviations Project Management Tools and Techniques

Variables	N	Mean	Standard Deviation
There is proper usage of Classic technique.	13	2.55	0.875
There is proper usage of waterfall technique.	13	2.56	0.812
There is proper usage of Agile project mgt. technique.	13	2.56	0.512
There is proper usage of Program Evaluation and Review Technique. (PERT)	13	3.8	1.01
There is proper usage of Critical Path technique.	13	*4.1*	0.99
There is proper usage of basic computer programming's, Word, excel, AutoCAD, MS project.	13	*4.8*	*1.3*

Own Survey, computed in SPSS

4.5. Application of the Concept of Project Cycle in AAIHP Phases Via Consultant

Table 4.6: Mean and Standard Deviations on the Project Cycle

Variables	N	Mean	Standard Deviation
There is awareness of project Initiation.	11	3.71	0.926
There is awareness of project Planning.	11	3.36	0.845
There is awareness of project Execution Plan.	11	3.43	0.814
There is awareness of project Monitoring and Controlling Plan.	11	2.98	1.25
There is awareness of project Closing and Controlling Plan.	11	2.84	0.514

Own Survey, computed in SPSS,

4.6. Application of the Project Management Knowledge Areas in AAIHP, Via Consultant

Table 4.7: Mean and Standard Deviations on Project Management Knowledge Areas

Variables	N	Mean	Standard Deviation
There is proper Project Integration Management plan.	11	3.67	0.916
There is proper Project Scope Management plan.	11	2.64	0.897
There is proper Project Time Management.	11	2.36	0.497
There is proper Project Cost Management plan.	11	2.64	1.297
There is proper Project Quality Management plan.	11	2.29	0.926
There is proper Project Human Resources Management plan.	11	3.86	1.070
There is proper Project Communications Management plan.	11	3.19	1.081
There is proper Project Risk Management plan.	11	2.86	0.870
There is proper Project Procurement Management plan.	11	3.86	0.970
There is proper Project Risk Management plan.	11	3.21	0.802

Own Survey, computed in SPSS

4.7. Application of Project Management Tools and Techniques, Via Consultant

Table 4.8: Mean and Standard Deviations on Project Management Tools and Techniques

Variables	N	Mean	Standard Deviation
There is proper usage of Classic technique.	11	2.93	0.816
There is proper usage of waterfall technique.	11	2.43	0.714
There is proper usage of Agile project management technique.	11	2.43	0.914
There is proper usage of Program Evaluation and Review Technique.(PERT)	11	4.53	0.979
There is proper usage of Critical Path technique.	11	4.6.07	1.016
There is proper usage of basic computer programming's, Word, excel, AutoCAD, MS project.	11	5.79	1.102

Own Survey, computed in SPSS

From the table tabulated above; questionnaires responds by the HDPO's and the Consultants, the project initiation plan has been agreeably managed, the initiation part has been pre-designed by mutual consensus of the city administration and the GTZ-IS during the initiation of the Office Addis Ababa IHDP, even if the plans are at hand, the implementation is not satisfactory throughout all projects, while the project planning; execution; monitoring and controlling seems very weak, from due interview and some secondary data obtained, the program develop a project plan and execute it at the beginning stage well, but they fail to control the changes that come into the project due to different reasons, even when developing the project plan they fail to use inputs like, historical information, constraints and assumptions. Weakness in planning and implementation has been identified as one of the main reasons for the disappointing results of projects in Africa (Moradat , Merrery, Seshoka and Sally 2005).

In regards to the project management Knowledge area, the programme has a positive and a well designed and manuals are prepared to guide the over all process, the Technical Manual Volume-1, is about a modular building system introduction, while the Technical Manual Volume-2, is about on the focusing the programmes objectives, like Development of law cost housing system, construction guide line, guide line for stakeholder professionals, check lists for different tasks, thats why the project integrated management plan result from both the HDPO's and the consultant shows an agreed result, Mean (4.2) and (3.67) while the standard Deveation is (1.183) and (0.916) respectively, which implies closer to 1, but the continous implimentation system has jeopardized.Neverthless this part is a critical part that more than 80% of the programme is involved in. According to Toney and Powers (1997) discuss potential benefits of an appropriate use of PMTT as follows: increase efficiency, reduce training, improve project predictability, increase stakeholder confidence, increase probability of project success, and improve communication.

Scope management plan hasbeen developed from the very intiation stage but it is not updated, when changes are occures. Work break down structure are applied to determine the scope but in a limited manner. Scope verification is not made at all, in the projects. Proper followups of the work results is not done. Scope plan is not usually updated when there is a change, thats why the scope planning practice is not good. Wheras the time management plann is still in troubled condition according to the questionaire.

Time, Cost and quality are adversly inter related one onother, if one of them is affected the other two will be touched, in determining the cost of a given project the following four major inputs are necessary. These are Resource planning, cost estimating, cost budgeting and cost control. When conducting the project cost determination experts are not well involved and project management software is not also applied. In Estimating the cost work break down structure is not applicable and they use analogous estimating technique. In this technique an old cost estimation data or record is used. Because resource requirement and activity definition are poorly made in the scope definition phase it is difficult to estimate the nearest possible cost of the projects. so the cost budgeting made based on the estimation is wrong and that is why most of the projects of Addis

Ababa houses project are in scarcity of budget. Cost control mechanism of the projects in the selected sites is weak. The cost baseline developed is not a good reference or measure of performance because it is not properly developed. In conclusion to this the cost planning practice of the IHDP project is weak.

Regarding the quality management plan, the Result indicates that the quality is in poor practice. There is a quality plan prepared but quality assurance activities are not made well. The quality assurance process is a very important part of the quality planning process in the projects. From the interviews and secondary data collected the quality control process is also very weak. When the quality plan is made quality planning tools like, flowcharts; checksheets; pareto diagrams; histograms; control charts; control limits is barley done.

One of the main process is the human resource planning, in this regard the data's collected and the interviews explained theat the practice is, Staff requirement is identified and planned in the initiation phase of the project; roles and responsibility are identified and assigned properly. All the necessary staffs for completing of the projects are acquired and different techniques like negotiations, pre assignment and procurement are made for acquisition of the staffs. Then staffs are assigned according to their duty and responsibility. Teams are also developed according to requirements and performance reviews are conducted, also the result shows a positive implication.

Similarly communication planning is made at the initiation of the project, by identifying the information needed; communication tools are barley applied. Information distribution to and from the concerned staff and stakeholders are made traditionally. Performance reporting is made and variance and trend analysis is somehow used for measuring the performance of the project, there is no a documented plan for communication in the projects, this also affects the project stakeholder managemtn plan adversly.

The best practice in tracking risk management plan is to follow the five steps, identify the risk; analyze the risk; evaluate the risk or risk assessment; treat the risk; monitor and review the risk.But some of these process like risk identification, Evaluate and monitoring and control not properly practiced in projects of the selected sites. From the

interview and secondary document review, it is observed that some of these risk planning processes are not well managed, thats why the administration tries to foresee onother mechanism to deliver the housing and to minimize financial shortage in the mean time.

4.8. Application of Technical, Managerial, Cultural and Theoretical Practice, Via Contractors

Table 4.9: Mean and Standard Deviations on Technical, Managerial, Cultural and Theoretical Practice

Variables	N	Mean	Standard Deviation
Do you have any other project other than condominium construction works	26	1.70	0.837
How is HDPO's/Consultants response when your company is in need of any types of support	26	3.63	0.818
How do you rate the communication between your company and other stakeholders ,HDPO	26	1.50	0.909
How do you rate the communication between your company and other stakeholders, Consultant	26	1.50	0.509
How do you rate the communication between your company and other stakeholders, Other Contractors	26	1.00	1.017
How do you rate the communication between your company and other stakeholders, SME's	26	1.50	0.809
How do you rate the communication between your company and other stakeholders , Material Supplier	26	2.30	1000
Does the HDPO's or Consultants asks you for any favor in return? If yes what kind	26	1.90	1.000
Where do you think that ambiguities arises mostly from, HDPO	26	2.30	0.509
Where do you think that ambiguities arises mostly from, Consultant	26	3.00	1.017
Contractors	26	2.50	0.509
SME's	26	1.00	0.000
The cause for Ambiguity, Negligence	26	1.50	0.509
The cause for Ambiguity, wrong personnel in the right place	26	1.50	0.509
Payment delay	26	1.63	.000
Material/equipment delay	26	1.97	0.490

Variables	N	Mean	Standard Deviation
Defects on materials delivered	26	1.80	0.000
Poor workmanship	26	1.63	0.490
What is your priority in this project			
On time completion	26	3.23	0.679
Maximum Profit	26	4.83	1.124
Customer satisfaction	26	3.90	0.803
Experience getting / sharing	26	3.97	0.718
Quality construction	26	4.10	.803
Do you have any idea about modern project management system	26	3.30	1.236
Is your company apply the five project life cycle process on the project	26	0.50	0.509
Is your company apply the six functions of project management process on the project	26	1.00	0.498
Do you have any quality assurance manual in your company	26	1.13	0.346
Quality Workmanship	26	3.10	0.803
Ask consultants for any feedback for your workmanship	26	3.27	0.450
Implement quality assurance system	26	2.87	.776
Try to take correction action for any defects caused by building elements before	26	3.87	0.629
It was important to understand the Project	26	3.27	0.828
It effectively increased my perspective About modular construction process	26	2.87	0.346
I have developed managerial knowledge	26	2.67	0.711
I have developed technical knowledge the mechanism is easy and understandable	26	3.40	0.498
It can be applicable for any project	26	2.50	0.509
Adequate knowledge transfer for the Project	26	4.00	0.525

Own Survey, computed in SPSS

The overall profile of the contractor's shows most of the contractors are well educated and have an average work experience of more than four years. The majority of respondents, which account for 70%, have university degrees and the rest have Masters Degree or college diploma.

Also at their company, profile the majority of the contractors (85%) fall under the category of grade 5-6 and only a few falls under category GC/BC grade 3-4. The majority of the contractors or 90% of the respondents have less than ten key employees. The analysis shows there is a close relation between years of firm's establishment and years of participation in condominium projects.

According to the questionnaires and interviews obtained, 60% of the respondents are agreeing that the overall support program has improved their performance only 35% of the respondents are satisfied with the financial and material supports and few satisfied with the training provided to them. The contractors even argue that there has been no training instead it was just the orientation of the program thus; it does not have anything to do with capacity building. They added that the training organized is too short and not performance oriented. Most of them criticized the training that it is mainly focused on introducing to the program. HDPO also confirm that due to the limited budget and professionals, they are only able to prepare 3-4 days training. Thus, the duration is too short to equip the contractors with sufficient managerial and technical expertise. The majority of respondents (80%) are very dissatisfied with the equipment support. From the interview, it is found that the equipment support was adequately available at the beginning of the program when HDPO used to facilitate loan to contractors to buy major equipment necessary for their works.

Since in most construction projects, each stakeholder has their own priorities. Both the consultant and HDPO officer criticize contractors because of their priority to maximize profit at any cost. Even if 65% of contractors agree profit as their priority, also 35% of respondents agree completion on time and gaining experience are their highest priority.

4.9. Application of Technical, Managerial, cultural and Theoretical, Practice, Via SME's

Table 4.10. Mean and Standard Deviations on Technical, Managerial, Cultural and Theoretical

Variables	N	Mean	Standard Deviation
Work experience in building construction related projects	18	2.67	.966
Position you are working in the 20/80 housing project	18	3.29	1.347
What is your work experience in building construction related projects	18	3.76	1.338
When does this enterprise is established	18	3.62	1.024
What is your enterprise work engagement to deliver for the construction	18	2.14	1.389
With which stakeholder does your company related mostly? more than one choice is possible	18	2.90	1.411
How do you rate the communication b/n your enterprise and HDPO	18	2.67	1.623
How do you rate the communication b/n your enterprise and Consultant	18	2.67	1.623
How do you rate the communication b/n your enterprise and Other SME'e	18	3.14	1.153
How do you rate the communication b/n your enterprise and Material Supplier	18	3.33	.796
How is HDPO's response when your enterprise is in need of any types of support	18	2.67	1.278
Do you think that there is a quality inconsistency between production of your side? If yes please reason out why	18	1.29	.463
Do your enterprise engaged laboratory test process for the product	18	1.24	.436

Variables	N	Mean	Standard Deviation
Do your enterprise has a mechanism to correct bad products	18	1.19	.402
What is your level of satisfaction in this construction process	18	1.95	1.071
Does the HDPO gives you a periodic training	18	1.00	1.000
How do you find the training that the HDPO organized for you			
It was important to understand the Project	18	2.95	.973
It effectively increased my perspective About modular construction process	18	2.71	1.146
I have developed managerial knowledge	18	2.71	.845
I have developed technical knowledge	18	3.57	.746
The mechanism is easy and understandable	18	2.95	.805
It can be applicable for any project	18	1.67	.730
Do you think the capacity building program improve your capacity	18	1.24	.436
When do you communicate the HDPO? When we face difficulties/ ambiguity	18	1.48	.512
When do you communicate the HDPO? When there is a meeting	18	1.14	.359
When do you communicate the HDPO? When we have any claims	18	1.86	0.450
When do you communicate the HDPO? At the time of provisional/ final acceptance	18	1.90	.776

Own Survey, computed in SPSS

The specific objective of the AAIHDP concerning MSEs is promotion of micro and small-scale enterprises, which can absorb more labour force and operate at a lower overhead cost as well as promotion of cost efficient housing construction technology (GTZ/ETH 2005). There is a steering committee established to promote and solve problems faced by MSEs. MSE development bureau, MFIs - Micro Finance Institutions

and TVET-Technical Vocational Education Training are the major supporting organizations.

There is MSE development office in every sub-city, which are responsible for recruiting and facilitating training services for newly recruited MSEs. The training organized in collaboration with HDPO and TVET. The training given is two types one is managerial and the other is technical. The theory part of the training delivered by sub-sites focus on management aspects that includes administration, accounting, profitability, and saving and it takes up only 4-5 days. The duration for technical part is different for different specialization. For instance pre-cast beam production takes 5-10 days and electrical and sanitary installation take about 10-30 days.

The above stated supports have an impact on the performance of MSEs a survey was conducted and only 10% of the respondents agree on the training effectiveness to improve their technical knowhow. However, around 50% of the respondents found the training easy, understandable, and it helps them to improve their managerial know how. Besides, they believe that the knowledge acquired is practical to use in this project as well as for other similar construction projects.

The majority of the respondents of MSEs are managers and accountant in their respective enterprises, which accounts for 70% and 20% of the total respectively. Their educational background varies from high school level (52%) to university degree (5%) and the rest 43% of the respondent has a diploma or vocational college certificate. According to the analysis different age group participate in this project but 52% of the respondents is an age group from 24-29. As in any other construction projects in Ethiopia, the number of female respondents are few.

4.10. General Defects Observed from Owners/ Occupants

To identify defects in newly constructed condominium houses, site visits and survey questionnaires for owners and occupants who are living currently on that site were undertaken. The survey was also supported by observation whose guide was developed from the literature. During observation, breakdown of door handles, door mirrors,

irregular plastering, loosened fix of the kitchen sink, breakdown of toilet fixtures, and breakdown of terrazzo tiles on the stairs and corridors were highly evident. The houses covered during observation are mostly new houses, which are not yet occupied. This survey had two intentions first to find out defects observed during the time of handing over the houses. Secondly, to find out defects exists after the occupant move in the house. For this set of, owners were selected to identify defects before occupancy and any tenants who are currently living in the houses are selected to find out the defect observed while using the installed fixtures and utilities

From the table, there are more females are involved in the response than males, with in the age limit of from 25-40, which takes about 58.2 percent, 76.7 percent has no any construction experience while the rest 33 percent involved one way or the other way, 30.2 percent of the total respondent lives in One Bed Room type, and about 27.9 percent lived in the Three bed room type, following 25.6 percent and 16.3 percent lives in Two Bed Room and Studio type respectively.

Whereas most of the respondents are rental that scores 65 percent and the rest 35 percent are house owners with family members from two up to four and from 5-8 members are existed, and most of them has been living in the house for more than four years.

According to the first analysis, the most identified defects during handing over, are defects related to sanitary fixtures. This includes improper placement of kitchen sinks and toilet fixtures, improper functioning of a toilet flush, leaking of plumbing pipes and hand wash basins, Likewise more than 90% of respondents replied that their door and window handle was not functioning well, also the plastering of walls and slabs including walls and floor cracks in addition to malfunctioned electrical and sanitary installation, inappropriate placement of floor finishing material of stair case and water leakages are visible defects, from the survey observations leads the owners and renters for extra cost of maintenance and re-installation. According to Arditi & Gunaydin (1997), quality is meeting the requirements of the stakeholders: designer, contractor and regulatory agencies as well as the owner.

Table 4.11: Mean and Standard deviations on General Observation of Owners/ Occupants

Variables	N	Mean	Standard Deviation
Sex of the respondent	38	1.51	0.706
Age of the respondent	38	2.67	1.040
Level of Education	38	3.07	1.421
Are you familiar with any construction works	38	1.77	0.827
Which type of housing unit are you living in	38	2.65	1.044
How many family members are living in your compound	38	2.05	0.844
What is your position in the compound	38	1.3	0.982
For how long do you live in this compound	38	3.33	1.393
How you rate the quality of condominium houses	38	2.28	1.054
Have you ever observed any types of defects inside or near the houses	38	1.05	0.613
Brocken doors or windows	38	1.07	0.958
Malfunction door or window handle	38	1.02	0.952
Deflection of columns or beams	38	1.05	0.713
Poor quality plastering works	38	1.00	1.000
Wall cracking	38	1.09	0.694
Floor cracking	38	1.07	0.558
Poor quality staircase finishes	38	1.05	0.713
Improper sanitary pipe installation	38	1.09	0.994
Malfunction kitchen sink	38	1.00	1.000
Malfunction Water closet	38	1.02	0.852
Water leakage	38	1.05	0.813
Improper electrical line installation	38	1.07	0.958

Own Survey, computed in SPSS

From the survey made on customer satisfaction, more than 75% of occupants (the respondents) are not satisfied with the quality of the houses they are living in. Yet there is no independent office to report their complaint. Thus, customer satisfaction is addressed in the survey because meeting customer satisfaction is one of the major goals in the practices of project implementation. The findings include all stakeholders ‟opinion on customer satisfaction. Accordingly, 80% of contractors mention that customer is their priority. The consultant stated that they are trying to meet customer satisfaction through undertaking performance measurement and give the feedback to contractors every two weeks. The HDPO added that it is difficult to satisfy all the customers with all the constraints that the project have. They also argues that not all the defects inside the houses are caused by construction fault, it could sometimes cause by misuse of the utilities and fixture by the household. Joseph M. Juran states Quality Handbook, 5th edition, Quality means “features of products which meet customer needs and thereby provide customer satisfaction.” Quality improvement related to features usually costs more. Quality also means “freedom from deficiencies.”

CHAPTER FIVE

CONCLUSION, RECOMMENDATION AND FURTHER STUDY RECOMMENDATION

5.1 Conclusion

Administering a large project like this has its own difficulties. The consultants are being helpful in assisting HDPO with supervision and contractual matters however; it does not help the project to avoid major defects during construction. HDPO has its own constraints like financial shortage, lack of work force, lack of construction material and above all lack of applying construction management process. These constraints reflect back to the project participants and affect their output.

Last but not list, constraints are lack of project Management Practices, lack of applying Project management Knowledge Areas, lack of applying Project Management Tools and Techniques also collaborative working atmosphere at the project site. Lack of good communication between project participants, coordination problem between contractor and MSEs and having different priority might create non-conducive working atmosphere in the project site.

In general, application of PM tools and software packages has a positive and significant association with better accomplishment.

5.2 Recommendation

As concluded in the above sections the “Yeka Tafo and Goro Silasie, under Project 4” condominium projects has so many shortcomings especially on its capacity building programs, recruitment of project participants and the practices of project management process. The sample is too small to conclude that the entire projects of AAHDPO running have identical problems and shortcomings. However, it can be an indication for further studies of other sites for comparison and draw conclusion of the overall program.

As the main responsible body for the supervision of quality works, the consultants need to carry out their duties to assure quality construction. They need to affirm that all material delivered to the site need to be tested and approved by their supervisors before execution. They also need to inspect and approve construction works continuously. HDPO also need to make sure that the consultants carry out their duties and responsibilities in accordance with the contract.

It is difficult to say that the program meets its objective in providing a large number of houses to the urban population, since its scope was to built from 150,000- 200,000 housing units within five years period, look how many housing units are being delivered till now about 300,000 housing units, that’s why this paper insists the use of proper Project management tools and techniques are very important, or it shall narrow their scope, in recruiting a large number of young people if the scope plan meets more recruiting can be injected to the industry. However, it forgoes the need of providing quality houses. Thus, it is important for the program, to note that quality construction is also one of the success factors for any construction as well as for the program.

Finally yet importantly, all parties in the project need to coordinate all their efforts for the delivery of quality houses for the better and developed housing delivery system.

5.3 Recommended for Further Study

Further study is recommended in assessing the constraints of HDPO in administering and managing the project and the constraints of the consultants during the works and material inspection. There is a need to carry further studies to find out how the defects observed during handing over of the houses pass final inspections by HDPO and the consultants.

Finally, further study shall be recommended, on the alternative construction materials that can reduce the material cost, time, and quality problems, since the construction cost dramatically increasing day to day, also energy saving systems, and financial solutions shall be left for further study.

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APPENDIX

Questionnaires

A. Questionnaires for HDPO's and Consultants

First of all I would like to thank in advance for your contribution, this is a servey type questionnaires for the partial fulfillment of the requirements for the degree of Master of ART in Project Management St. Mery's University, on **ASSESSMENT OF THE PRACTICES and CHALLENGES of THE IMPLIMENTATION OF AAIHDP**, in case of 20/80 condominium house construction in Addis Ababa, the datas collected from you is confidential and is for the sole purpose of the respective paper.

PART ONE: Background information about the respondent

1.1 Sex of the respondent: 1= Male 2=Female

1.2. What is your age? ----------years

1.3. Level of Education:

1=Secondary 2=Vocational Training 3= Diploma 4=Degree 5= Masters 6=PhD

1.4**.** What is your work experience in building construction related projects? .....years.

1.5**.** In what Position you are working in the 20/80 housing project?

1. Manager 2. Engineer 3. Coordinator 4. Member 5. Other.....

PART TWO: Factors Contributing for proper follow up of a Project

2. Influence of project Management Practice on the 5 Project management phases.

Indicate your observations on the factors below appropriately: **1= Strongly Disagree 2= Disagree 3= Weakly Agree 4= Agree 5= Strongly Agree.**

Factor	1	2	3	4	5
2.1 There is awareness of project Initiation `Plan					
2.2 There is awareness of project Planning Plan.					
2.3 There is awareness of project Execution Plan.					
2.4 There is awareness of project Monitoring and Controlling Plan.					
2.5 There is awareness of project Closing and Controlling Plan.					

PART THREE: Factors Contributing for Timely Completion of Project

3. Influence of Project management practice on project managemnt Knowledge Areas.

Indicate your observations on the factors below appropriately: **1= Strongly Disagree 2= Disagree 3= Weakly Agree 4= Agree 5= Strongly Agree.**

Factor	1	2	3	4	5
3.1 There is proper Project Integration Management plan of 20/80 housing construction project.					
3.2 There is proper Project Scope Management plan.					
3.3 There is proper Project Time Management plan					
3.4 There is proper Project Cost Management plan.					
3.5 There is proper Project Quality Management plan.					
3.6 There is proper Project Human Resources Management plan.					
3.7 There is proper Project Communications Management plan.					
3.8 There is proper Project Risk Management plan.					
3.9 There is proper Project Procurement Management plan.					
3.10 There is proper Project Stakeholder Management plan.					

PART FOUR: Factors Contributing for proper Project Tracking

4. Influence of Project Management Tools and Techniques

Indicate your observations on the factors below appropriately: **1= Strongly Disagree 2= Disagree 3= Weakly Agree 4= Agree 5= Strongly Agree.**

Factor	1	2	3	4	5
4.1. There is proper usage of Classic technique.					
4.2. There is proper usage of waterfall technique.					
4.3. There is proper usage of Agile project mgt. technique.					
4.4. There is proper usage of Program Evaluation and Review Technique.(PERT)					
4.3. There is proper usage of Critical Path technique.					
4.5. There is proper usage of basic computer programming's, Word, excel, AutoCAD, MS project.					

B. Questionnaires for Contractors

PART ONE: Background information about the respondent

1 Sex of the respondent: 1= Male 2=Female

2. What is your age? ----------years

3. Level of Education:

1= High school diploma 2=Vocational Training 3= Diploma 4=Degree 5= Masters 6=PhD

4. What is your work experience in building construction related projects?.....years.

5. In what Position you are working in the 20/80 housing project?

1	2	3	4	.....
Manager	Engineer	Coordinator	Member	Other

PART TWO: Technical, Managerial, cultural and Theoretical practice

6. For how long that your company participated in condominium construction works ?

1	2	3	4	5
> a year	1 year < 2 year	2year < 3 year	3 year < 4 year	>5 year

7. what is the type of your organization ?

1	2
General Contractor	Building Contractor

8. Do you have any other project other than condominium construction works ?

1	2
Yes	No

9.. How is HDPO's/Consultants responce when your company is in need of any types of support?

1	2	3	4	5
Unsupportive	Moderate	Supportive	Good	Very good

10. How do you rate the communication b/n your company and other stakeholders?

	Very Good	Good	Moderate	Poor
1. HDPO	.....	.....	.....	.....
2. Consultant	.....	.....	.....	.....
3. Other Contractor	.....	.....	.....	.....
4. SMEs	.....	.....	.....	.....
5. Material Supplier	.....	.....	.....	.....

11. Does the HDPO's or Consultants asks you for any favor in return? If yes what kined?

1	2
Yes	No

12. do you usually face ambiguity? If yes answer question 12 and 13?

1	2
Yes	No

13. where do you think that ambiguities arised mostly from?

	Extremely unlikely	Unlikely	Likely	extremely Likely
1. HDPO	.....	.....	.....	.....
2. Consultant	.....	.....	.....	.....
3. Contractor	.....	.....	.....	.....
4. SMEs	.....	.....	.....	.....

14. What do you think the cause for Ambiguity	Yes	No
- Lack of information about the project	1	2
- Negligency	1	2
- wrong personnel in the right place	1	2
- Payment delay	1	2
- Material/equipment delay	1	2
- Defects on materials delivered	1	2
- Poor workmanship	1	2

15. What is your priority in this project	Not a priority	Low Priority	Neutral	Moderate Priority	High Priority
- On time completion	1	2	3	4	5
- Maximum Profit	1	2	3	4	5
- Customer satisfaction	1	2	3	4	5
- Experience getting / sharing	1	2	3	4	5
- Quality construction	1	2	3	4	5

16 . Do you have any idea about modern project management system? If yes answer 16-17

1	2
Yes	No

17 . Is your company apply the five project life cycle process on the project?

1	2
Yes	No

18. Is your company apply the six functions of project management process on the project?

1	2
Yes	No

19. Do you have any quality assurance manual in your company?

1	2
Yes	No

20. How does your company promotes quality construction?

	Strongly dissagree	Dissagree	Agree /	Strongly Agree	Very Agree
- Quality Workmanship	1	2	3	4	5
- Ask consultants for any feedback for Your workmanship	1	2	3	4	5
- Impliment quality assurance system	1	2	3	4	5
- try to take correction action for any Defects caused by building elements before Installing.	1	2	3	4	5

21. how do you fined the trainnig that the HDPO organized for you?

	Strongly dissagree	Disagree	Agree	helpfull	V. helpfull
-It was important to understand the Project.	1	2	3	4	5
-It effectively increased my perspective about modular construction process.	1	2	3	4	5
-I have developed managerial knowlege	1	2	3	4	5
- I have developed technical knowlege.	1	2	3	4	5
- The mechanism is easy and understandable.	1	2	3	4	5
- It can be applicable for any project.	1	2	3	4	5
- Adequate knowlege transfer for the project.	1	2	3	4	5

C. Questionnaires for SME's

PART ONE: Background information about the respondent

1 Sex of the respondent: 1**=** Male 2=Female

2. What is your age? ----------years

3. Level of Education:

1= High school diploma 2=Vocational Training 3= Diploma 4=Degree 5= Masters 6=PhD

4**.** What is your work experience in building construction related projects?.....years.

5**.** In what Position you are working in the 20/80 housing project?

1	2	3	4	.....
Manager	accountant	Coordinator	Member	Other

PART TWO: Technical, Managerial, cultural and Theoretical practice

6. When does this enterprise is established ?

1	2	3	4	5
>Half a year	1 year < 2 year	2year < 3 year	3 year < 4 year	>5 year

7. What is your enterprise work engagement to deliver for the construction ? Circle One

1. HCB wall and Ribbed slab production
2. Pre cast Beam production
3. Door and Window prodution (Metal Work)
4. Electrical Installation work
5. Sanitary Installation work

8. With which stakeholder does your company related mostly ? morethan one choice is possible.

1	2	3	4	5
HDPO	Consultant	Contractor	other SMEs	Material Supplier

9. How do you rate the communication b/n your enterprise and other stakeholders?

	Very Good	Good	Moderate	Poor
1. HDPO	.....	.....	.....	.....
2. Consultant	.....	.....	.....	.....
3. Contractor	.....	.....	.....	.....
4. Other SMEs	.....	.....	.....	.....
5. Material Supplier	.....	.....	.....	.....

10. How is HDPO's responce when your enterprise is in need of any types of support?

1	2	3	4	5
Unsupportive	Moderate	Supportive	Good	Very good

1	2
Yes	No

If others

11. Do you think that there is a quality incosistency between production of your side? If yes please reason out why

1 Yes 2 No reason

12. Do your enterprise engaged labratory test process for the product?

1 Yes 2 No reason

13. Do your interprise has a mechanism to correct bad products ?

1 Yes 2 No

14. what is your level of satisfaction in this construction process ?

1 Very dissatisfied 2 dissatisfied 3 Unsure 4 Satisfied 5 Very Satisfied

15. Does the HDPO gives you a periodic trainning ? if yes answer the next question

1 Yes 2 No

16. how do you fined the trainnig that the HDPO organized for you?

	Strongly dissagree	dissagree	Agree	helpfull	V. helpfull
-It was important to understand the Project.	1	2	2	2	2
-It effectively increased my perspective About modular construction process.	1	2	2	2	2
-I have developed managerial knowlege	1	2	2	2	2
- I have developed technical knowlege.	1	2	2	2	2
- The mechanism is easy and understandable.	1	2	2	2	2
- It can be applicable for any project.	1	2	2	2	2

17. Do you think the capacity building programm improve your capacity?

1	2
Yes	No

18. When do you communicate the HDPO?

	Yes	No
- When we face difficulties/ ambiguity	1	2
- When there is a meeting	1	2
- When we have any claims	1	2
- At the time of provessional/ final acceptance	1	2

D. Questionnaires for Owners/ Occupants/

PART ONE: Background information about the respondent

1 Sex of the respondent: 1= Male 2=Female

2. What is your age? ----------years

3. Level of Education:

1= High school diploma 2=Vocational Training 3= Diploma 4=Degree 5= Masters 6=PhD. Other.....

4. Are you familiar with any construction works ?

1	2
Yes	No

5 Which type of housing unit is you living in ?

1	2	3	4
Studio	One bed room	Two bed room	Three bed room

6. How many family members are living in your compound.

1	2	3	4
1-2	2-4	5-8	> 8

7. What is your position in the compound

1	2
owner	Rental

8. For how long do you live in this compound ?

1	2	3	4	5
>Half a year	1<2 year	2<3 year	3<4 year	>4 year

9. How you rate the quality of condominium houses

1	2	3	4	5
Very poor	Poor	Fair	Good	Excelent

PART ONE 2. General defects observed while living in the compound

10. Have you ever observed any types of defects inside or near the houses? If your answer is Yes, please answer question number 2.2 and 2.3.

1	1
Yes	No

11. which of the following defects are you observed.

	Yes	No
Brocken doors or windows	1	2
Malfunction door or window handle	1	2
Deflection of columns or beams	1	2
Poor quality plastering works	1	2

Wall cracking	1	2
Floor cracking	1	2
Poor quality staircase finishes	1	2
Improper sanitary pipe installation	1	2
Malfunction kitchen sink	1	2
Malfunction Water closet	1	2
Water leakage	1	2
Improper electrical line installation	1	2

Any Other difficulties, please mention it in the space provided.

Thank you so much