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EXAMINING THE QUALIFICATION AND VALUES EXPECTED OF PROJECT MANAGERS IN THE CONSTRUCTION INDUSTRY

HAMZA PATIENCE MUZAMUZI

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ADVISOR
Assoc. Prof. Dr. LATIF ONUR UĞUR

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İNŞAAT SEKTÖRÜNDE PROJE MÜDÜRLERİNİN SAHİP OLMASI BEKLENEN NİTELİK VE DEĞERLERİN İNCELENMESİ

HAMZA PATİENCE MUZAMUZİ

YÜKSEK LİSANS TEZİ
İNŞAAT MÜHENDİSLİĞİ ANABİLİM DALI

DANIŞMAN

DOÇ. DR. LATIF ONUR UĞUR

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The thesis study was prepared by Hamza Patience Muzamuzi by the following jury of Düzce Graduate Education Institute. It has been accepted as a **MASTER'S THESIS** in Civil Engineering Department.

Thesis advisor

Assoc. Prof. Dr. Latif Onur UĞUR
Düzce University

Jury Members:

Assoc. Prof. Dr. Latif Onur UĞUR
Düzce University

Prof. Dr. Serkan SUBAŞI
Düzce Üniversitesi

Prof. Dr. Mürsel ERDAL
Gazı University

Date of Defense: 01/07/20

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LIST OF ABBREVIATIONS

PM	Project Manager
PMBOK	Project Management Book of Knowledge
PMI	Project Management Institute
ISO	International Organizational for Standardization

ABSTRACT

EXAMINING THE QUALIFICATION AND VALUES EXPECTED OF PROJECT MANAGERS IN THE CONSTRUCTION INDUSTRY

Hamza Patience MUZAMUZI
Düzce University
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The project Manager has shown an impeccable role in construction industry productions, whereby all main keys of construction are influenced by the methods and skills that the project manager and his/her team implement into the completion of the project at client satisfaction (cost, quality and time). Many projects' managers have been struggling to achieve a desirable level but the project management skills, appliances and implementations are limited. In construction, the project manager is the centre of activity, guiding the project to completion. However, many projects have struggled with the performance of various project managers due to a variety of factors, and some people do not have a clear understanding of what a project manager does. Many people believe that a project manager's job is limited to monitoring work, especially when the project is in progress, but a project manager's job is much broader and begins before construction begins. This study defines project manager values in the construction industry and how each project manager should strive to achieve them at a high level of competence. To learn more about the construction industry's ideas and opinions on this topic, A quantitative study was conducted from beginning to end, analysing construction project management methods and how they can be used in all stages of construction to ensure project success, as well as the advantages of hiring a project manager who understands the tasks and demonstrates his or her values. Several employees of construction and consultancy firms carried it out. A formula for predicting the number of individuals to be surveyed with a confidence level using the Likert scale for questionnaires. The study examines the responsibilities of a project manager, as well as the skills required of a competent construction project manager, as well as the benefits of his or her activities on a construction project.

Keywords: Construction, Project management, Project manager, Values of project manager

ÖZET

İNŞAAT SEKTÖRÜNDE PROJE MÜDÜRÜLERİNİN SAHİP OLMASI BEKLENEN NİTELİK VE DEĞERLERİN İNCELENMESİ

Hamza Patience MUZAMUZI
Düzce Üniversitesi
Lisansüstü Eğitim Enstitüsü, İnşaat Mühendisliği Anabilim Dalı
Yüksek Lisans Tezi
Danışman: Doç. Dr. Latif Onur Uğur
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Proje Yöneticisi, inşaat sektörü yapımlarında kusursuz bir rol oynamıştır. Proje yöneticisi ve ekibinin projenin müşteri memnuniyetinde (maliyet, kalite ve zaman) tamamlanmasına yönelik uyguladığı yöntem ve becerilere tüm temel yapı anahtarı dahil olmuştur. Pek çok proje yöneticisi arzu edilen bir düzeye ulaşmak için mücadele etmektedir ancak proje yönetimi becerileri, araçları ve uygulamaları sınırlıdır. İnşaatta proje yöneticisi, projenin tamamlanmasına rehberlik eden faaliyet merkezidir. Ancak pek çok proje, çeşitli faktörler nedeniyle çeşitli proje yöneticilerinin performansı konusunda zorluk yaşıyordu ve bazı kişiler proje yöneticisinin ne yaptığını net bir şekilde anlamıyor. Birçok kişi, bir proje yöneticisinin işinin, özellikle proje devam ederken, işi izlemekle sınırlı olduğuna inanır, ancak bir proje yöneticisinin işi çok daha geniştir ve inşaat başlamadan önce başlar.Bu çalışma, inşaat sektöründe proje yöneticisi değerlerini ve her proje yöneticisinin bunları yüksek bir yeterlilik düzeyinde başarmak için nasıl çaba göstermesi gerektiğini tanımlar. İnşaat sektörünün bu iddia hakkındaki düşünce ve görüşlerini belirlemek için, kökten nicel bir çalışma yapılmış ve inşaat proje yönetim yöntemleri incelenmiştir. Projenin başarısını ve projede görevleri iyi anlayan ve değerlerini gösteren uygun bir proje yöneticisi kullanmanın elde edilen faydalarını sürdürmek için inşaatın tüm aşamalarında nasıl kullanılabileceği incelenmiştir. İnşaat ve danışmanlık şirketlerinde farklı personel tarafından yürütülmüştür. Anketler için Likert ölçeğinin kullanılması, anket yapılacak kişi sayısını bir güven düzeyiyle tahmin etmeye yönelik bir formül olmuştur. Araştırma, bir proje yöneticisinin rolünü ve

yetkin bir inşaat projesi yöneticisi için gerekli becerileri ve bir inşaat projesiyle ilgili eylemlerinin faydalarını göstermektedir.

Anahtar sözcükler: İnşaat, Proje yönetimi, Proje yöneticisi, Proje yöneticisi değerleri

1. INTRODUCTION

The reasons for the success or failure of projects and their project management are many and different. A construction project is commonly acknowledged as successful when it is completed on time, within budget, and in accordance with specifications and to the stakeholders' satisfaction. Value congruence is then understood as promoting character-based trust between partners, relational predictability, mutual liking and affinity as well as socioemotional communication.

Investigating stakeholder values is complicated, however, because some stakeholders are organizations, and others are individuals; the values espoused by an organization are not just an aggregation of individual values[1]. An easier first step in analysis is to focus on individual values and begin with project managers, while realizing that they function in stakeholder contexts. It is unclear why project management scholars have not delved into literary fiction with narratives unfolding in fictitious companies. Although it is accepted that project management practice can be seen as a social conduct, defined by history, context, individual values and wider structural frameworks[2].

In a broader historical context, the most important sort of temporary organization has been construction projects[3]. Construction projects and construction project management, as is widely known, are characterized by process time, risk, and uncertainty (geology, availability of resources, safety/accidents), they are irreversible, have the potential for harmful environmental consequences, and are affected by unknown environmental influences (weather, earthquakes), and are highly localized in the contemporary world and domestic specialized literature. People and their knowledge, abilities, and skills are said to be the most important aspect of project management.

Project management is a concept and technique that helps users to get the most of their potential while working with restricted resources and increasing profits. ’’With a look at the future, for the extension of the function of a project manager, the only potential problem on

the horizon of the future deals with the ability of managers to properly and effectively use these techniques. The lack of training is a threat for many project managers, and this situation must be remedied. We have to advance in our efforts to build basic standards and rules, so that techniques and steps of this philosophy can be used as much as possible"[4].

1.1. HISTORY OF PROJECT MANAGEMENT

Project management is an ancient system that has been used in ancient projects like Gaza, the Parthenon, the Colosseum, the Gothic cathedral Medieval Europe, the Great voyages of exploration, the Taj Mahal, and the Mega projects of the industrial revolutions. All those are successful projects where researchers have found out that project managers were using project management techniques[5]. Project management began years ago and was primarily focused on a few industries and military activities, but as time and technology have progressed, project management has expanded to include a wide range of organizations, including the construction industry[6].

It has been noted, "The era of new project management started in 1958, with development of CPM and PERT''[7], [8]. Project management originated in the chemical sector immediately before World War II [9]. Four periods have been studied for the development of project management; Fig. 1.1 depicts the four periods with the distinct application of project management[8], [9].

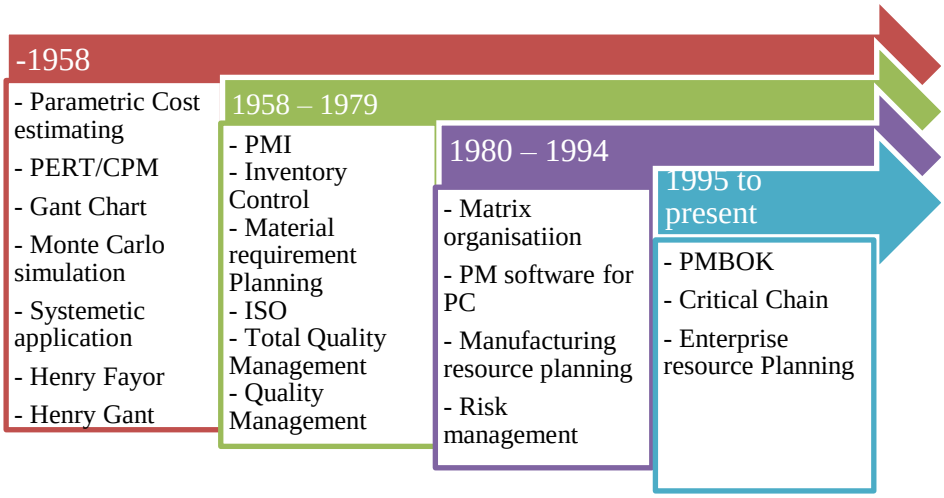


Figure 1.1. Chain of project management development.

Between 1950 and 1979, several major project management tools were developed, including CPM/PERT, Material Requirement Planning (MRP), and others. CPM/PERT was developed largely for government projects on large computer systems by specialized programmers [8].

1.2. CONSTRUCTION

The construction sector, like other industries, has witnessed technical growth, with innovations introduced in the industry from the past to the present [10], hence, the construction industry can be presented on a timeline of its revolution, which is divided into 4 revolutions[11].

The graph below Figure 1.2 shows the evolution of construction industry as the result of technology advancements.

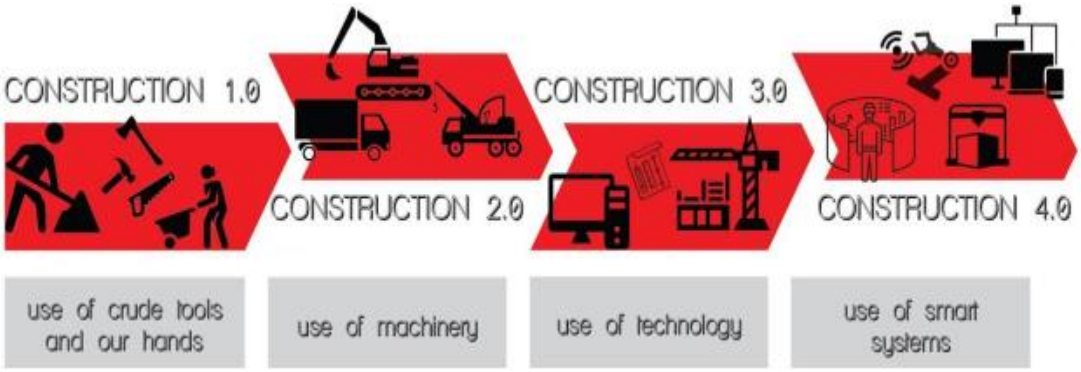


Figure 1.2. Evolution of construction industry.

As illustrated in the graphic above, numerous phases in the construction industry have coexisted with new technology developments. Initially, the construction industry version 1.0 was defined by the use of rudimentary tools and hands; revolution 2.0 concentrated too much on the use of machines to speed and improve the quality of construction project progress, and there was too much energy spent on labour and basic tools. The introduction of technology in the industry marked Revolution 3.0.

This means became increasingly digitalized, the revolution 4.0 which continues to this day, began with the creation of more sophisticated technology at the turn of the twenty-first century, and the internet was mobilized across the industry. Sensors that are small and powerful at a reasonable price.

The industry has begun to evolve as a result of complicated software, hardware, and machines that can speed up work while also learning and participating in the construction of large networks. The first discussion of the industry 4.0 was held in Germany at Hannover in 2011[12]. The new revolution has been named many names “industry 4.0’’; ’’Smart Factory’, ’Intelligent factory’ and ‘Factory of the future’’ to show how the industry will be looking in the future [13]. As a result, the sector has become far more intelligent, flexible, mobile, and fast.

1.3. CONSTRUCTION PROJECT

Firstly, it is important to understand what a project is. A project is defined as a temporary endeavour undertaken to create a unique product or service or obtain the desired result [14]. A project is a collection of related tasks that, when completed in the correct order, result in the completion of the project.

Construction projects are complex and time consuming. The total growth of a project is usually separated into several phases, each of which demands a particular set of specialized services [15].

A project has four major characters, which are stated the following:

- An established Objective.
- A define lifespan with a beginning, and an end.
- Involvement of different professionals and department.
- Doing something, which has not been done before?
- Specific time, Cost, and performance requirements.

Before beginning any other activity, the project objective must be set by emphasizing the vision and mission of the project so that every member of the project team understands them and agrees to follow the project dynamic. Second, the project lifespan should be established by estimating its duration for users. The engagement of several sorts of specialists is what makes a building project difficult [16].

Because everyone wants something special or new, when planning a project, the first ideas should be related to how that project will be unique in terms of characters or services, as well as the production/execution time, establishing a set of routine and procedures that are there to solve previous project problems, the cost of the project production should be projected and acted upon, unless there are some variations and should be recorded. Schedule, cost, and performance criteria are the pioneers of project management; so, the project should be performed on time, within budget, and with high customer satisfaction.

A construction project, sometimes known as a 'project,' is the planned process of creating, remodelling, or refurbishing a building, structure, or infrastructure. Typically, the project process begins with an overarching requirement that is developed through the development of a brief, feasibility studies, option studies, design, finance, and construction [17].

A construction project is done in six stages where each stage has its own role, which has an impact to all parties, for the project to complete different parties' plays different role, and this includes different sectors through different level. Those stages are the following:

- Concept of the project
- Design
- Pre-construction stage
- Procurement stage
- Construction stage
- Post-construction stage

1.3.1. Construction Projects and other Projects

A construction project is made up of a distinct set of procedures that involve coordinated and regulated operations with start and finish dates that are carried out to achieve the project's objectives. To accomplish the project's objectives, deliverables that meet precise standards must be provided.

Even though many initiatives are similar, each one is distinct. The following are examples of project differences:

- deliverables provided;
- stakeholders influencing;
- resources used;
- constraints;
- the way processes are tailored to provide the deliverables

When compared to the other initiatives, the construction project has made a significant effect. The following are the characteristics that distinguish the construction project from others:

- Construction is frequently performed at a specific location or site, demanding an in-depth assessment of the logistical problems involved. Building supplies and resources must be procured and brought to the job site. Working space, traffic management, security, public health and safety, and the environmental impact of the operations must all be considered if the works are extensive.
- Any effort is hampered by the weather. We routinely deal with rain in the Caribbean, as well as the possibility of storms and hurricanes. Temperature, snow, water, and sand may all have a detrimental influence on the development of construction projects in various regions of the world.
- The introduction of new materials and technology, procedures, and criteria for sustainable or green development can all contribute to increased risk and complexity in modern building. They may be reduced and managed with careful project planning, design, research, and procurement.
- Because every construction project is distinct, the external influences and restrictions will be diverse as well, and they will alter over time. Rates of technical change, sources of funding, market dynamics, climate change, politics, and changing customer requirements are just a few examples.
- Construction projects normally have a year-to-year timetable. As a result, customers would normally be expected to have a design and budget established and codified at an early stage. Some projects' finer elements and points aren't fully worked out until after the work has begun, which has a detrimental influence on cost, quality, and project completion dates.
- Finally, various members of the project organization must strike a balance between competing commercial business interests and the project's goals and objectives. Contractors, for example, may place a greater emphasis on profit maximization than on the other factors that determine project success. Clients, on the other hand, will want the asset provided as quickly as feasible, at the lowest possible cost, and with the greatest possible quality.

Consultants may try to optimize their earnings by minimizing their time on the project, depending on their contractual terms. This creates a complicated terrain that must be negotiated, and it frequently does not work in the project's favour.

1.3.2. Construction Project Life Cycle

One of the characteristics which make a construction project is also its life cycle, construction project's life cycle is limited depending on the agreed period between the client and the contractor. This always is a bit of a challenge for a contractor due to too many factors influencing the project timeline, which mostly makes the project delayed for delivery. A project life cycle sequentially passes through four stages: Define, Planning, Executing and Delivery.

The beginning of the project starts when the client creates the idea where the energy or effort of the project goes up, and efforts are different as they are shown in Fig. 1.3.

1.3.3. Define Stage

Details of the projects are written down, Visions and Missions are established, teams are formed, and Main responsibilities are dispersed. Once an owner has determined that a new facility is required, he or she must identify the needs as well as the financial limits[16] . The project's core components are defined by identifying broad project features such location, performance goals, size, configuration, layout, equipment, services, and other owner requirements. Although extensive preliminary, architectural, or technical work may be required, conceptual planning is not the same as thorough design. Although a design professional may be hired to provide technical assistance and guidance, the owner is ultimately in charge of defining the assignment[15].

1.3.4. Planning/Design Stage

This level is where more effort is put in, where project drawings are created, and where the complete project needs to be implemented when they are to be done, the production life span

it will take, the project budget, and who should be awarded the contract are all determined[16].

During the design phase, the entire project's architectural and engineering design is finalized. It all comes together with the creation of final working drawings and specifications for the full building project. Design, procurement, and construction sometimes overlap, with procurement and construction beginning on selected components as soon as the design is complete and drawings and specifications for those segments are available[15].

1.3.5. Execution Stage

At this point, the project is in the process of physically building and installing the materials and equipment, which includes supplying the necessary people, construction equipment, materials, supplies, supervision, and management[15].

More actions that are physical and more effort to work under pressure to meet the time line of the project. it is when they say ‘’from paperwork to field work’’. Therefore, more professionals are gathered together with one goal and target despite differentiation of cultures, languages etc.

1.3.6. Delivery/Closing Stage

All construction activities and services were finished; the project is delivered to the client, redeploying project resources involves releasing project equipment’s/materials to other projects and find new assignments for team members. In addition, this stage might include customer training and transferring documents.

The bellow Figure 1.3 identifies the different stages of project life cycle.

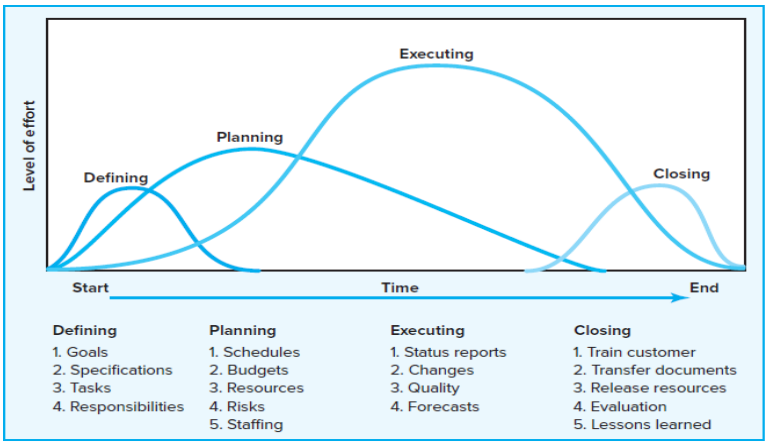


Figure 1.3 Project life cycle.

In order to show a construction project life cycle how efforts vary in different stages of the project, The above Fig. 1.3 shows level of effort against the time for a project life cycle; as the result shows it [16]. Different teams work on the project and their efforts varies according to the stage. However, project characteristics have been debated within lean construction [18]. That project management in construction should be viewed as a production process with information flows akin to a manufacturing mentality.

1.4. DEVELOPING PROJECT LIFE CYCLE

The life cycle of a project determines all series of phases and their activities by which the construction project passes through from its beginning up to the completion and delivery of it. Therefore, when developing the project life cycle the project manager should focus on the various phases that the project will be stepping in. Development of project life cycle can be adaptive, iterative, incremental, adaptive or hybrid model [19].

- The breadth of a predicted life cycle, timing, and cost of a project are acknowledged in early stage of the life cycle. Any modifications to the scope are controlled with care. Waterfall life cycles are another name for predictive life cycles.
- The scope of work is frequently determined early in the project life cycle in an iterative life cycle, but budget and time estimates are regularly altered as the project team's

understanding of the product increases. Iterations are a set of recurring cycles that build the product, whereas increments are a progressive increase in the product's performance.

- In an incremental life cycle, the deliverable is created using an incremental life cycle, which involves a series of iterations that incrementally expand functionality over time. Only after the final iteration does the deliverable have the essential and sufficient capacity to be regarded complete.
- Adaptive life cycles, agile, iterative, or incremental life cycles are examples of adaptive life cycles. Before beginning iteration, the precise scope is developed and authorized. Agile or change-driven life cycles are other terms for adaptive life cycles.
- In a hybrid life cycle a predictive and adaptive life cycle are combined. A predictive development life cycle is used for project aspects that are well-known or have established needs, whereas an adaptive development life cycle is used for project parts that are continually changing.

The project manager should be aware of what needs to be done (action) and how to execute it (process) at each step of the project's life cycle. Those techniques employed for project dynamic motion assist the project manager in delivering a comprehensive quality project to the client in the conclusion.

The below Fig. 1.4 shows construction project life cycle through different phases from the start of it until the completion, a project manager and his/her team concentrate on knowledge areas as shown on the Figure 1.4.

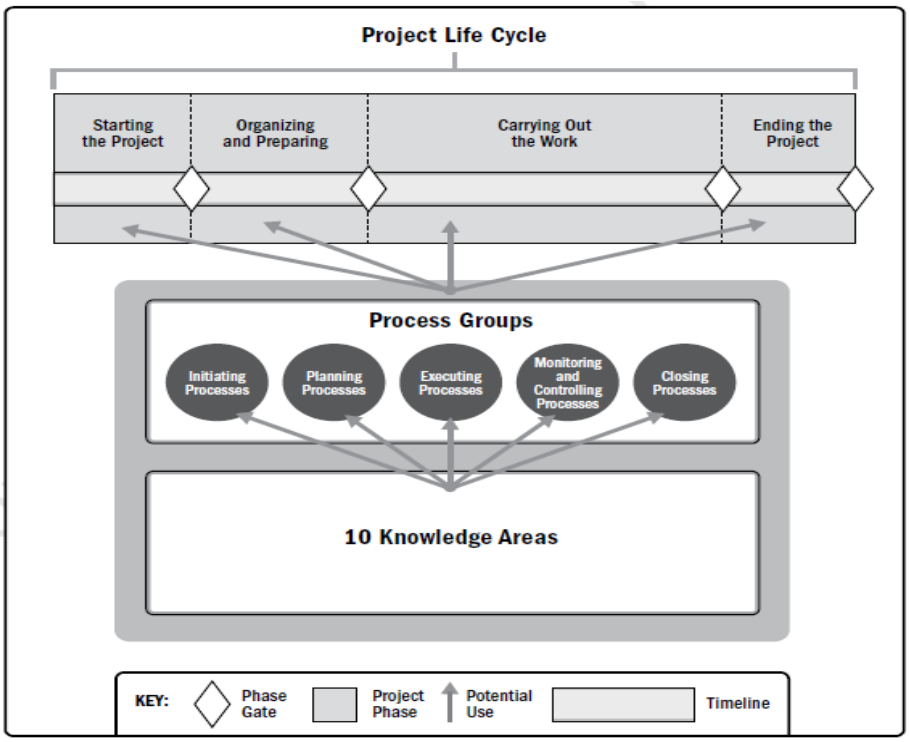


Figure 1.4. Project life cycle.

The project management team is responsible for determining the optimal life cycle for each project. The project life cycle must be adaptable enough to deal with the project's wide range of variables. Flexibility in the life cycle can be achieved by:

- Identify the processes needed for each stage
- Performing the identified processes in appropriate stage
- Adjusting various attributes of a stage.

2. LITERATURE REVIEW

The construction industry is a broad sector that brings together several personalities on one project; hence, a project manager is essential to be a leader of the construction dynamic in order to complete the project within budget and on time.

2.1. PROJECT MANAGER

The more the construction industry demands keep increasing due to the development of construction technology, the more complex requirements design for clients increase, therefore a project manager with high capabilities and skills is required from the early stage to the final stage of project delivery successfully.

A project manager is a person who will undertake the project missions and use different methods to achieve the project goals[19]. A project manager is defined as a businessperson, psychologist, accountant, and technician. Furthermore, he stated that a project manager is an effective person who has technical expertise to achieve the goal and effectively lead his/her team members[20].

A conception a project manager with his skills of creativity, decision making, organizing, planning and goal setting, problem solving, ability to follow up critical path and result orientation which she/he uses to deliver a successful project[21]. A project manager to add value to a project on conception section he/she should have skills in Planning, Organizing, Entrepreneurship and Resource allocation[22]. A project manager should be able to diagnose concepts, be efficient, and be proactive[23]. on human skills a project manager to add value and deliver a successful project s/he have Communication, delegating, leadership, motivation and Listening skills[21]. The needed skills of project manager regarding human skills; a project manager should be good in team building, leadership, conflict resolution and stakeholder management[24]. Project manager should be self-confident, oral communication, managing group process, developing others, stamina and adaptability[23].

Project manager to add value and deliver a successful projects/he should focus on client's needs, Leadership, Self-control, and Flexibility[25].

Technical section, a project manager, who has administrative, financial management, quality management, risk management, technical knowledge and time management skill ease process of delivering a project with success. Project manager has technical skill, cost management, computing skill, risk management and time management to deliver a successful project[26].

2.2. PROJECT MANAGER CHARACTERS AND SKILLS

A project manager supervises a construction project, and there are certain abilities and qualities that that individual should have or characterize in order to offer a successful project that meets all needs of all parties.

2.2.1. Project Manager Characters

Various authors have been talking how a project manager in construction is needed from the early stage of the project until the delivery of the project has been done. Project manager plays a big role in different carriers but the thesis is focusing on a construction project manager.

A construction project manager plans, directs, coordinates, and monitors the project at various phases. The project manager must have great scheduling abilities to guarantee the project is completed on schedule, within budget, and with the total quality required.

The project manager coordinates, manages, timelines, and control mechanisms all project activity and is responsible for completing the project within the specified time and budget constraints. He also coordinates project-related issues and expedites construction activities by dealing directly with the parties engaged[15].

However, the major role is to inspire project team members to obtain project objectives, and also project managers are expected to be leaders, deciders, and coordinators[27]. A good

communication system, integrity/loyalty in what he does, excitement or passion in his work, competency for the job, a team-building spirit to make the project's work easier, and problem-solving when unforeseen difficulties develop while the project is underway to be able to address the situation without putting the project at risk should all be characteristics of a project manager.

2.2.2. Project Manager Skills

Many people are drawn to construction management because it encompasses a diverse set of skills not seen in other professions. A project manager skills are classified into three departments[28].

- Technical management skill: Specific fields of project, program, and portfolio management knowledge, skills, and behaviours. The technical aspects of having a role.
- Time Management : Managing one's own and other people's time.
- Cost Management: The project manager should be able to control the costs of a project as indicated in the bills of quantities.
- Quality Management: Motivating, developing, and directing people as they work, identifying the best people/materials for the project.
- Monitoring: Monitoring and evaluating your own, other people's, or organizations' performance in order to make improvements or take remedial action.
- Leadrship skill: The knowledge, abilities, and attitudes required to lead, motivate, and direct a team in order to achieve an organization's business objectives.
- Coordination: Adapting behaviors in response to the actions of others.
- Complex problem solving : Identifying and assessing complicated problems and relevant information in order to develop, analyze, and execute solutions.
- Active Listening: Giving complete attention to what others are saying, taking time to understand what they're saying, asking questions as needed, and not interrupting at inopportune times.

- Critical Thinking: Identifying the merits and weaknesses of alternative solutions, conclusions, or problem - solving approaches using logic and reasoning.
- Stategic and industry management skill: Awareness of the sector and experience in the organization that improved performance and improved industry outcomes.
- Negotiation: Bringing people together and attempting to resolve conflicts.
- Active Learning: comprehending how to apply the new implications of fresh information to current and future issue solving and decision making.
- Critical Thinking: Identifying the merits and weaknesses of alternative solutions, conclusions, or problem - solving approaches using logic and reasoning.

2.3. VALUES OF CONSTRUCTION PROJECT MANAGER

A construction project manager with his/her team is the main core of a successful project, besides other parties that play different roles in the project. To be able to execute the expected operation, each of the interested parties should have the required qualification as well as enough information about the respective building that they receive from other involved partners.

This means that a continuous exchange of information about the building occurs between the participants of the construction process and the project manager plays a big role as an intermediator in all those communications.

A project manager must have several attributes that ensure the success of the project; that means deliver the project on time, with quality and within the agreed budget.
The values of the project managers are the follow[29].

- PM Ensure that the design management plan is being complied with .
- PM ensure that the requirements if the consolidated brief are being met.
- PM produce together with the design team,an integrated programme for the activities of all design team members.

- He/she develops the design programme to include dates for the submission and consideration of outstanding reports affecting design issues.
- He/she commissions any additional reports required.
- He/she draws attention to the design team's duties under the CDM regurations.
- To obtain, on behalf of design team information and decisions relevant to the design from the client.
- He/she submits with the design team preliminary design proposals to the client for approval.
- Define the roles and responsibilities of the design team, as well as any specialised contractors or manufacturers who may be involved in the design.
- Assess control processes and make any necessary changes to the project manual.
- Co-ordinate client and design team activities.
- Set critical dates for content delivery for cost checking, client approval, and bidding preparation.

2.4. COMPETENCE OF PROJECT MANAGER

In the past years, the managerial methods have been a barrier for many projects and influenced the performance of employees and managers of the institute. The compentence highlighten average and excellent managers in the organization. The term ''competence'' is extracted in two meanings[30].

The first meaning as from foreign dictionary it is defined as ''power, sphere of action and a reach of power'' and the second definition competence is the ability to perform a task.Two words which make clear definition ''competence and compentency'' according to Collins dictionary is the ability to do something that requires a specific knowledge.

According the above two different deffinition can be classified into two class : outsourcing and inner characters. The two are combined to create a compentence project manager using the power that has been given and the inner characters Fig.2.5[30].

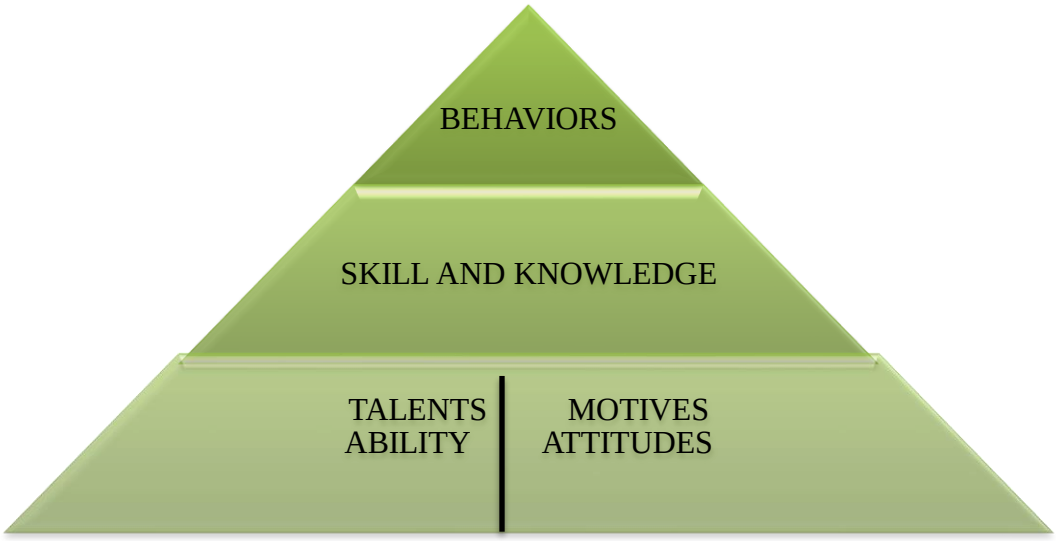


Figure 2.5. Model structure of a compentence.

Project management competency standards are divided into two categories: those relating to what project managers should know, which are represented by project management body of knowledge guides, and those relating to what project managers should be able to do, which are typically represented by performance-based or occupational competency standards[31].

2.5. PROJECT MANAGEMENT PROCESSES

Over previous decades, various good practice standards and project management methodologies have been developed, addressing many aspects of the project life cycle. As a result of the proper implementation of project management methodologies, project manager performance should improve, resulting in increased success[32].

To determine the best management style and guidance, many standards and guidelines, such as ISO 21500 or PMBOK from the Project Management Institute, can be used. ISO 21500 gives advice on important project management ideas and practices that have an impact on project performance. It provides high-level definitions of concepts and techniques that are considered to be good project management practices[33]. Despite the fact that projects are included in programs and project portfolios, this international organization for standardization does not provide detailed guidance on program and project portfolio

management. Strategic leadership topics are only discussed in relation to project management[33].

PMBOK 5 (A Guide to the Project Management Body of Knowledge: Fifth Edition) outlines project management principles and gives advice for managing individual projects. It also explains the project life cycle, as well as the project management life cycle and procedures that go along with it. The Project Management Body of Knowledge (PMBOK) is a globally recognized project management standard and reference. This standard's material, like that of other professions, is based on recognized best practices by project manager practitioners who contributed to its development[19].

For numerous areas/subjects, the Table 2.1 below demonstrates the fundamental differences in management process between ISO and PMBOK in depth.

Table 2.1. Project Management Processes Per Subject/Knowledge Area.

ISO 21500:2012	**PMBoK 5**
Integration: Develop Project Charter Develop project plans Direct project work Control project work Control changes Close project phase or project Collect lessons learned	**Integration:** Develop Project Charter Develop project management plan Direct and manage project work Monitor and control project work Perform integrated Change Control Close project or phase
Scope: Define scope Create Work Breakdown Structure Define activities Control scope	**Scope:** Plan Scope management Collect requirements Define scope Create WBS Validate scope Control scope
Time: Sequence activities Estimate activity durations Develop schedule Control schedule	**Time:** Plan Schedule management Define activities Sequence activities Estimate activity resources Estimate activity duration Develop schedule Control schedule

Table 2.1. Project management Processes Per Subject/Knowledge Area (continue)

Cost: Estimate costs Develop budget Control costs	**Cost:** Plan Cost management Estimate costs Determine budget Control costs
Resource: Establish project team Estimate resources Define project organization Develop project team Control resources Manage project team	**Human Resources:** Plan Human Resource management Acquire project team Develop project team Manage project team
Quality: Plan quality Perform quality assurance Perform quality control	**Quality:** Plan Quality management Perform quality assurance Control quality
Risk: Identify risks Assess risk Treat risks Control risks	**Risk:** Plan Risk management Identify risks Perform qualitative risk analysis Perform quantitative risk analysis Plan risk responses Control risks
Stakeholder: Identify stakeholders Manage stakeholders	**Stakeholder:** Identify stakeholders Plan stakeholders' management Manage stakeholders' engagement Control stakeholders' engagement
Communication: Plan Communications Distribute information Manage communications	**Communication:** Plan Communications management Manage communications Control communications
Procurement: Plan procurements Select suppliers Administer contracts	**Procurement:** Plan Procurement management Conduct procurements Control procurements Close procurements

2.6. KNOWLEDGE ZONES AND PROJECT MANAGEMENT PROCESS

For the requirements of a single project, one or more different Knowledge Areas, such as money planning or health and safety management, may be necessary. The project control categories and types of knowledge are shown in Table 2.2.

Table 2.2. Process Group and Knowledge Area.

Knowledge Zones	**Project Management Process**				
	Initiating Process Group	**Planning Process Group**	**Executing Process Group**	**Monitoring and Controlling Process Group**	**Closing Process Group**
Project Integration Management	1.1 Develop Project Charter	1.2 Develop Project Management Plan	1.3 Direct and Manage Project Work 1.4 Manage Project Knowledge	1.5 Monitor and Control Project Work 1.6 Perform Integrated Change Control	1.7 Close Project or Phase
Project Scope Management		2.1 Plan Scope Management 2.2 Collect Requirements 2.3 De.ne Scope 2.4 Create WBS		2.5 Validate Scope 2.6 Control Scope	
Project Schedule Management		3.1Plan Schedule Management 3.2 De.ne Activities 3.3 Sequence Activities 3.4 Estimate Activity Durations 3.5 Develop Schedule		3.6 Control Schedule	
Project Cost Management		4.1 Plan Cost Management 4.2 Estimate Costs 4.3 Determine Budget		4.4 Control Costs	

Table 2.2. Process Group and Knowledge Area (continue)

Project Quality Management		5.1 Plan Quality Management	5.2 Manage Quality	5.3Control Quality	
Project Resource Management		6.1 Plan Resource Management 6.2 Estimate Activity Resources	6.3Acquire Resources 6.4 Develop Team 6.5 Manage Team	6.6Control Resources	
Project Communications Management		7.1 Plan Communications Management	7.2 Manage Communications	7.3 Monitor Communications	
Project Risk Management		8.1 Plan Risk Management 8.2 Identify Risks 8.3 Perform Qualitative Risk Analysis 8.4 Perform Quantitative Risk Analysis 8.5 Plan Risk Responses	8.6 Implement Risk Responses	8.8Monitor Risks	
Project Procurement Management		9.1 Plan Procurement Management	9.2 Conduct Procurements	9.3 Control Procurements	
Project Stakeholder Management	10.1 Identify Stakeholders	10.2 Plan Stakeholder Engagement	10.3 Manage Stakeholder Engagement	10.4 Monitor Stakeholder Engagement	

2.7. SYSTEMATIC PROJECT MANAGEMENT PROCESS

The systematic project management technique lays out the processes that a project manager should evaluate and follow from beginning to end of the project's life cycle[34].

2.7.1. Pre-Design Phase

The project manager will now collaborate with the customer to establish the master schedule, which will contain all of the project's sequences and orders. When the owner is happy with

the master schedule, the project manager creates a milestones schedule that highlights the major events in the master timetable. The project manager will use milestones to assess if the project is on track, behind schedule, or ahead of schedule. Prior to procurement, the project manager reviews the contractor's contract to ensure that suitable language for controlling safety is included[34].

2.7.2. Design Phase

When it comes to time management during the design phase, the project manager is responsible for sustaining the master production schedule, working with the design on a schedule for the design phase, monitoring the design phase, developing the pre-bid project timeline, and preparing and distributing reports to the owner and other relevant parties[34].

2.7.3. Procurement Phase

At the pre-bid conference, the project manager, client, and designer collaborate to communicate the project timeframe to possible bidders. Any successful bidders will eventually be included in the scheduling process, and the project manager will also show the milestone schedule. The bidder will then produce their construction timeline, which will be included in the contract[34].

2.7.4. Construction Phase

During the construction phase the project manager monitors the progress of contractors in securing and maintaining proof of insurance, building permits, insurance, and all project related[34].

Project manager prepares an agenda and conduct this meeting prior to the contractor(s) moving onto the project site. As has been noted above the project manager main job is communication with others: which includes setting on-site communication procedures, conducting site meetings, distributing documents, and reporting on site activities such as the

number of workers and visitors, significant materials received, project delays and description of each contractor's activities[34].

The project managers should also continue issuing report during the procurement phase. These reports are:

- Schedule maintenance reports
- Project cost summary reports
- Cash flow projection reports
- Construction schedule reports
- Progress payment report

2.7.5. Post Construction Phase

The contractor must submit maintenance manuals and instructions for operating equipment and systems during this period. Before the project is finished, the project manager should organize the materials' compilation, organization, and indexing, as well as their binding into document sets.

Project at its end the contractor has contractors complete all their works and project manager initiates contractor closeout[34], this include:

- Certificate of substantial completion
- Completion of punch list work
- Final Lien waivers
- Guarantees/Warranties
- Final Payment application

All significant reports that have been issued during the design and construction phases should be summarized in final project report.

2.8. MANAGEMENT FUNCTIONS

2.8.1. Introduction

The project manager's success is determined by his ability to get the resources needed to accomplish the project's objectives by negotiating with upper-level and functional management. Furthermore, despite having a lot of delegated authority, the project manager has relatively little power. As a result, the managerial skills he requires to succeed may differ significantly from those required by his specific managerial counterparts[28].

Staff members at the project–functional interface have to answer to multiple supervisors, which is an issue in the project manager role. Functional and project managers treat their staff differ based on their "managed style" views due to their varying levels of authority and responsibilities[35]. Both program managers and functional representatives face difficulties as a result of this. The project manager must encourage functional delegates to devote them to the project on the horizontal axis, often with little respect for such personnel. After all, the middle is the most important objective, even if the contractor is working on projects with a strict timeline.

Both project leaders and functional representatives face difficulties as a result of management functions. The project manager must encourage functional representatives to devote themselves to the project on the horizontal axis, often with little respect for such personnel

These responsibilities and authorities were actually approved by traditional management systems; however, they were recently restructured for short managerial roles. Their fundamental concepts do not change, but their implementations do.

After all, the end-item is the most important objective, even though the worker is assigned to a project with a short deadline[35]:

- Planning
- Organizing

- Staffing
- Controlling
- Directing

2.8.2. Controlling

Control is a three-step process that entails tracking progress toward a goal, identifying what needs to happen, and taking appropriate measures to meet or surpass those goals[28]. The following are the three steps for assessing project progress.

Measuring by Using official and easy reports, determine the extent to which objectives are being met.

Evaluating by identifying the source of significant deviations from expected performance and taking appropriate action.

Correcting by getting command of a situation in order to halt a downward trend or capitalize on an unusually positive trend.

A way that a project manager has to follow to control and manager construction works as shown in Figure 2.6 bellow.

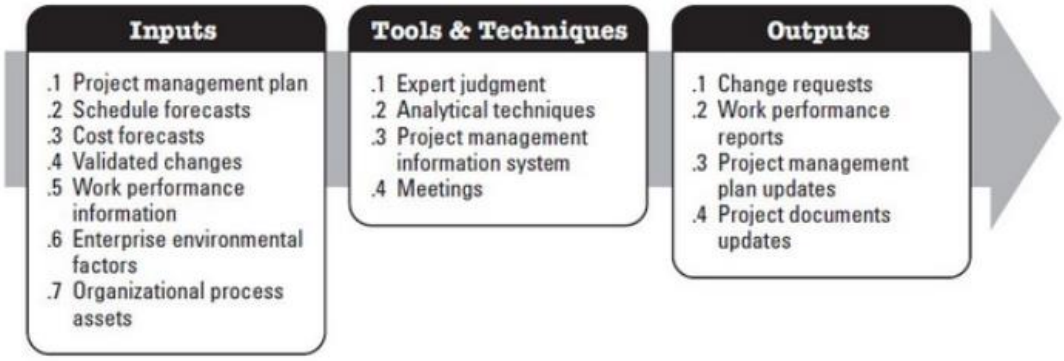


Figure 2.6. Control & Manage construction work.

The diagram above depicts how a project manager can control and manage construction work using the input that a project manager must provide, the tools and techniques that must be used, and the process's output. Project managers must have a thorough understanding of

organizational behaviour as well as strong interpersonal skills. order to be effective. When it comes to the controlling function, this is especially true.

Line managers may have the benefit of getting to know each of their staff individually[35]. Nevertheless, project managers are constrained by time, but it isn't always easy to estimate how successfully or cheaply a someone would cooperate with a group of people, particularly if the project manager has never interacted with this person before. Understanding the physiological and sociological elements that determine how people interact in groups takes time[35].

2.8.3. Directing

Directing is leading and carrying out the activities outlined in the project management plan, as well as executing accepted revisions to meet the project's goals[28].

A project manager must follow steps when directing construction work. How a project manager should direct and manage construction project work, as indicated in the diagram below.

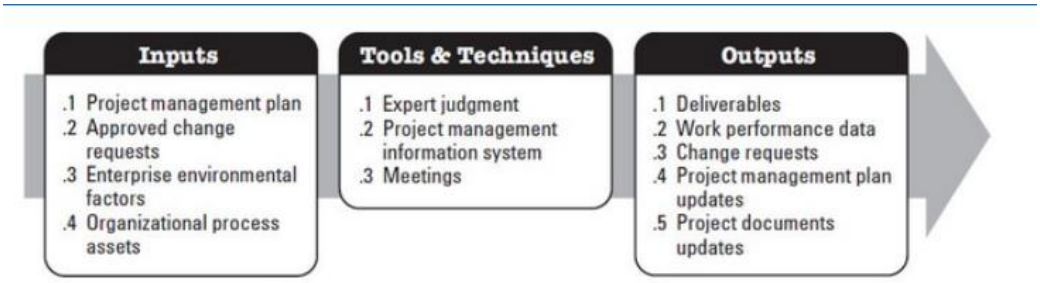


Figure 2.7. Direct & manage project work.

Directing is the process of putting authorized plans into action and carrying them out (through others) in order to accomplish or exceed objectives[28], [35].

Steps involved in the directing process:

- Staffing: Assisting in the selection of a qualified candidate for each post.
- Training: Individuals and groups are taught how to carry out their obligations and responsibilities.

- Supervising: Providing daily education, direction, and discipline to others as needed so that they can carry out their obligations and responsibilities.
- Delegating: Assigning labor, responsibility, and authority to others thus, that they can put their skills to the best possible use.
- Motivating: Assigning labor, responsibility, and authority to others so that they can make the best use of their skills.
- Counseling: Having private conversations with someone about how he might improve his work, address a personal problem, or achieve his goals.
- Coordinating: Seeing to it that tasks are completed in proportion to their importance and with the least amount of controversy as possible.

Because of the brief period of the project and the fact that employees may still be assigned to a functional manager while temporarily assigned to your effort, leading subordinates is a difficult assignment. In a project environment, the pleasure of getting to "know" one's colleagues may not be attainable[28], [35].

Directives should really have a single, clear goal in mind so that subordinates may work efficiently and get things done correctly the first time. Orders must be written in such a way that they are expected to be followed immediately. People's willingness to obey an order is mostly determined by their regard for you. As a result, never give an order that you won't be able to carry out. Oral directions and orders should be disguised as inquiries or suggestions. To avoid misunderstandings, the requestor should ask the recipient to repeat the oral orders[28], [35].

Employee development to feel secure on the job is challenging, particularly when a project has a limited lifespan. Specific methods for producing security in a project environment include:

- Informing them as to why they are in their current location
- Trying to make people feel like they're part where they would be
- Putting them in places where they are well-trained

- Showing employees how their contributions fit into the wider context

. The guidelines for proper motivation that a project manager should invest his efforts are:

- Maintain a cheerful attitude and refrain from criticizing management.
- Wouldn't keep commitments you can't keep.
- Send out responsiveness to customer
- Help to maximize the time and attention they require.

2.8.4. Area of Project Management Awareness

This is a subset of project management that is characterized by its knowledge requirements and described in terms of the processes, procedures, sources, outputs, tools, and techniques that make up its components[28].

A project manager to sustain his/her values in his/her position different area of management should be known how to be handled by different techniques and skills that a project manager should be in possession of them [35].

A below Figure 2.8 shows the main area that a project manager should have knowledge of their management.



Figure 2.8. Area of project management awareness.

The above are the management areas that a project manager focuses on to monitor and coordinate well a construction project. Those areas should be taken into consideration to deliver a successful project.

2.8.5. Project Authority

Project management systems provide a web of interconnections that can wreak havoc on authority delegation and internal authority structures. The legal or legitimate ability to command, act, or steer the activity of others is one kind of project manager authority. Superiors can delegate authority to you[35].

Power is given to a man by his dependents as a measure of their regard for him. The authority of a manager is defined as a combination of power and influence that allows employees, peers, and coworkers to accept his decisions willingly[35].

If a project manager lacks to create and sustain coalitions, his or her project's requirements will be met with opposition or apathy. The project manager's authority varies depending on

the project's size, management philosophy, and management's evaluation of probable functional manager conflicts[35].

A project manager should have more authority than his responsibility calls for, the exact amount of authority usually depending on the amount of risk that the project manager must take. The greater the risk, the greater the amount of authority. Project managers with only monitoring authority are in charge of some initiatives. Influence project managers are the title given to these project managers.

The following are the most balanced approach of power and authority issues in a project context[35]:

- Inadequate documentation or a lack of formal authority
- Incorrect perceptions of power and authority
- The project organization encouraging individualism
- Making decisions as a group depending on who is the most powerful.
- Capacity to assert power over or apply rewards and penalties
- Combining resources from multiple projects

In the project endeavor, the project leader does not have sole authority. He has many discussions with the manager of a department. The manager of a department is in charge of determining the time and goal of project tasks, while the functional manager is in charge of determining "how the assistance will be provided." The project manager achieves his goals by collaborating with mostly professional people. Project leadership for professional staff must entail both articulating the effort's purpose and the more evident responsibilities of planning, organizing, leading, and managing’’[35].

Planning is the most important aspect of any endeavor. This requires not just planning the operations to be done, but also arranging and constructing the power relationships that must exist throughout the project's lifespan. Because the environment for project management is constantly shifting, each project develops its own strategies and procedures, which can lead

to a variety of power relationships[35]. As a result, even if the tasks are the same, functional individuals can have distinct roles on different projects.

The project team creates a hierarchy of controls during the planning stage, which includes aspects such as:

- General manager’s responsibilities
- Operation Manager’s responsibilities
- Specialized responsibilities
- Consultor responsibilities
- Who must give their approval?

2.8.6. Project Manager Failures

In the construction industry, a project manager's failures are always measured by a variety of criteria. Because the manager's major focus is on the project's time, quality, and money, any aspect that leads to the failure of one of them can be referred to as a project manager's failure. A project manager failure when the project objectives are not clear, no legit scope of the works that need to be followed, when his communication management very poor and lack of visibility of all projects[36].

There are a variety of variables that lead to expatriate failure in their international assignment, including the inability to properly handle new responsibilities or adjust to the country of assignment[37]. The failure of a project manager as when his poor management lead to missed deadline, cost overruns, poor quality, rework, uncontrolled expansion of the project, loss of reputation of the organization, Failure in achieving the objectives for which the project was undertaken[28].

Project manager works are to be called failure when they did not meet the design goals, do not benefit to the customers and the project has no future potentials[38], Furthermore, when a project is not a financial success, does not produce a positive net value, or does not provide a return on investment for the organization, it is also a project manager's failure, as a result

of his low quality in completing the building project[38]. A project manager's failure can also be characterized as a mental state involving numerous dispositions and attitudes that result in activities to explore, discover, and create opportunities beyond a pre-specified value proposition with the purpose to develop and maximize a project's values.

3. METHODOLOGY

This chapter discusses the materials and methods utilized in this study to obtain data with a high level of confidence. The questions in the online questionnaire survey were primarily derived from the reports, case studies, and papers studied.

3.1. MATERIAL AND METHOD

The collection of data using quantitative and qualitative methodologies was performed to obtain accurate research results. A paper and web-based questionnaire was given to project managers and construction project participants from several construction companies. The questionnaire was created with the study's key aims in mind, namely, to obtain thorough information about the value of a project manager in a construction project, as well as the success factors and challenges to project management success.

The questionnaire had five sections, which were focusing on a different matter, section A was the background questions of the respondents such as gender, work experience, institute, and education background. Section B Investigation the factors influencing the values of a strong project manager, this includes project manager skills and qualities, strong contribution that a project manager provides to the construction project.

Section C Investigate the factors influencing a project to be delivered with success by a project manager. Section D respondent satisfaction with project management methods used on their project by the project manager. A scale of 1 to 5 was used to assess the assessment's impact values, with 1 indicating strong disagreement, 2 indicating disagree, 3 indicating neutral, 4 indicating agree and 5 indicating great agreement. The respondent could choose freely according to how he/she understands things with her/his experience in the industry.

3.2. DATA ANALYSIS

The survey was conducted with the goal of determining project managers' values in the construction industry. The data collected was analysed and evaluated by the author to come up with concrete results.

Using Cochran formula of sample size Sample,

$$\text{Size (S)}, \boldsymbol{S} = \boldsymbol{Z2} * \boldsymbol{p} * \frac{\boldsymbol{1}\,\boldsymbol{p}}{\boldsymbol{C2}} \quad (4.1)$$

Where,

$Z = 1.96$, Confidence level 95%

$p = 0.5$ Percentage picking a choice

$C = 0.05$ (Confidence interval).

The above formula is a sample for the infinite population and has a value of 384.16. An adjusted sample size of project managers who contributed to this surveying was used as below.

Adjusted Sample size,

$$\boldsymbol{s} = \frac{\boldsymbol{S}}{\boldsymbol{1}} + \left[\frac{\boldsymbol{s-1}}{\boldsymbol{population}}\right] \quad (4.2)$$

Using the above formula,

This has given a number of 20 samples needed for the surveying to be conducted at a high level of confidence[39].

4. FINDINGS

The research data was collected, and the respondents responded in accordance with the contents of the sections. The data below depicts the project manager's personality, project influences, manager values and strong contributions at each stage, as well as project members' satisfaction with how project management approaches were employed to deliver their prior project.

The following Figures present section A, which shows the respondents' background and details on their career experiences.

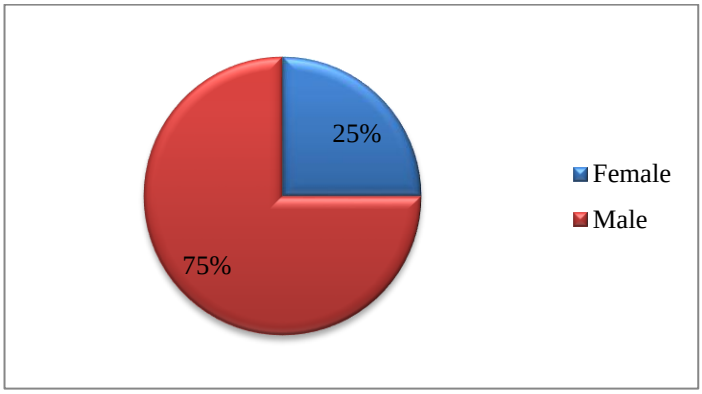


Figure 4.9. Gender of respondent.

Fig. 4.9 shows that 25% of the respondents were female and 75% of the respondents were male.

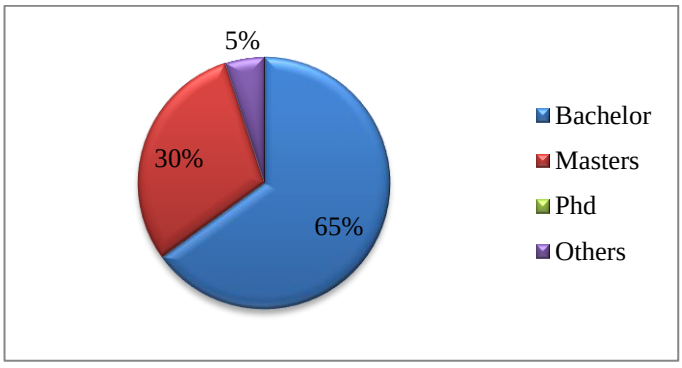


Figure 4.10. Education level of the respondents.

Fig. 4.10 illustrates that 65 percent of respondents have a bachelor's degree, 30% have a master's degree, and 5% have a different degree (courses, PhD,).

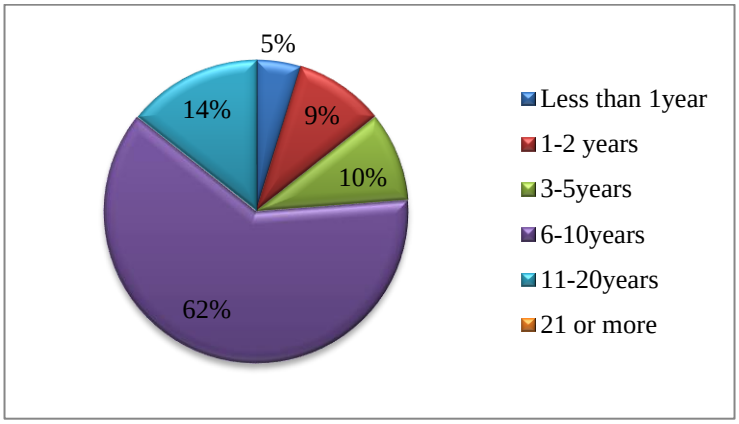


Figure 4.11. The respondents' work experience.

Fig. 4.11 illustrates that 5% from respondents have work experience less than 1year, 9% have work experience between 1-2 years, 10% have work experience of 3 to 5 years, 62% have work experience of 6 to 10 years and 14%.

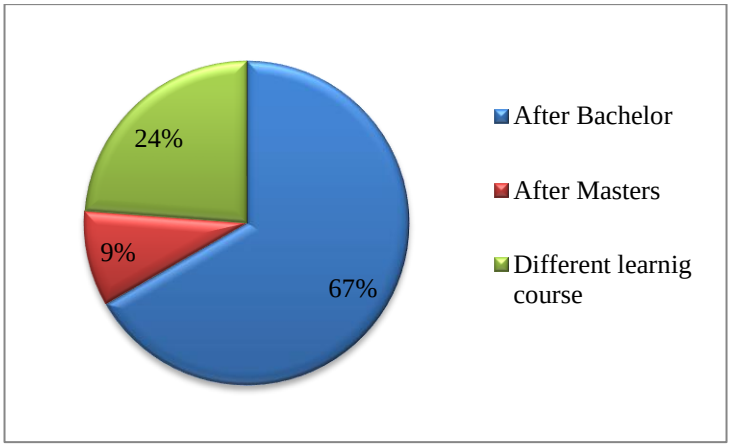


Figure 4.12. Project management course.

Fig. 4.12 demonstrates that 67 percent of respondents took project management courses after completing their bachelor's degree, 9 percent after completing their master's degree, and 24 percent had done other learning courses.

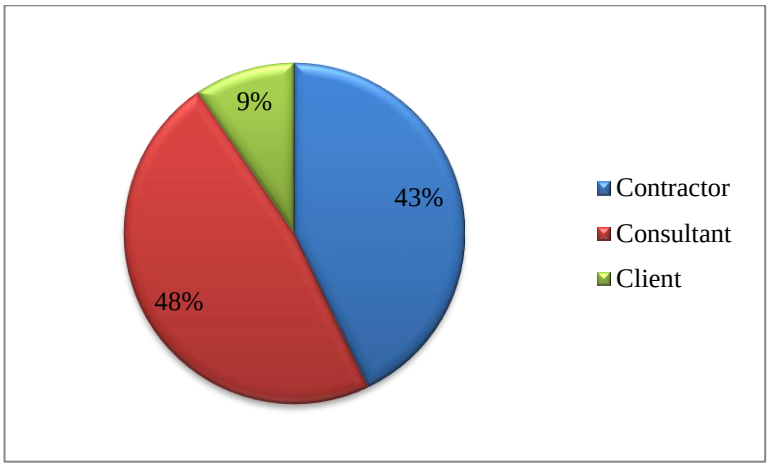


Figure 4.13. Working company.

According to the above Fig. 4.13, the respondents came from various companies. and 43% of respondents work for contractor companies, 48% work for consulting firms, and 9% work for the client. For this surveying, a large percentage of people hire consultants.

Section A, which primarily focused on respondents' self-information, is summarized in all of the preceding figures.

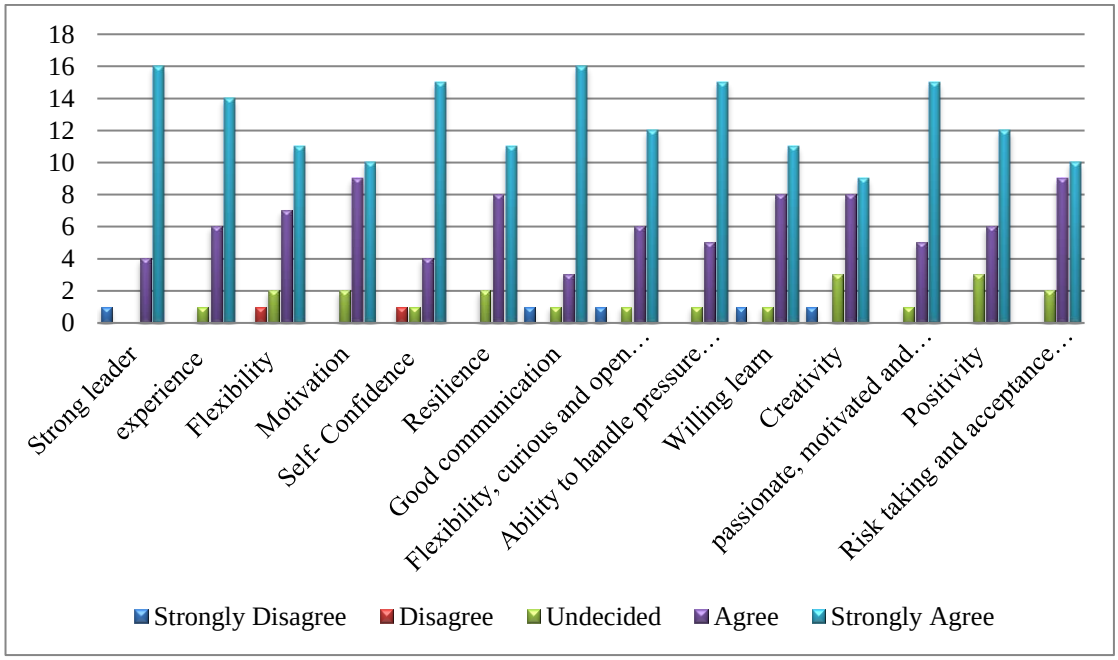


Figure 4.14. Personal characters of PM.

Fig. 4.14 shows that many among the respondents strongly agreed that a construction project manager should be characterised by strong leadership, have an experience in the industry, flexibility in/her doing, motivation for others, self-confidence in/her doing, resilience, good communication, curious, a good project manager should have the ability to handle pressure, willing to learn new knowledge, creative in his/her works, hard worker to deliver the project on time, thinking positive and risk-takers and willing to accept failure.

Let us focus on those character traits that have a large percentage of firmly agreeing that the project manager should have in order to deliver a strong and successful final result of the construction project, where both the client and the contractor may meet their goals and maximize their profits.

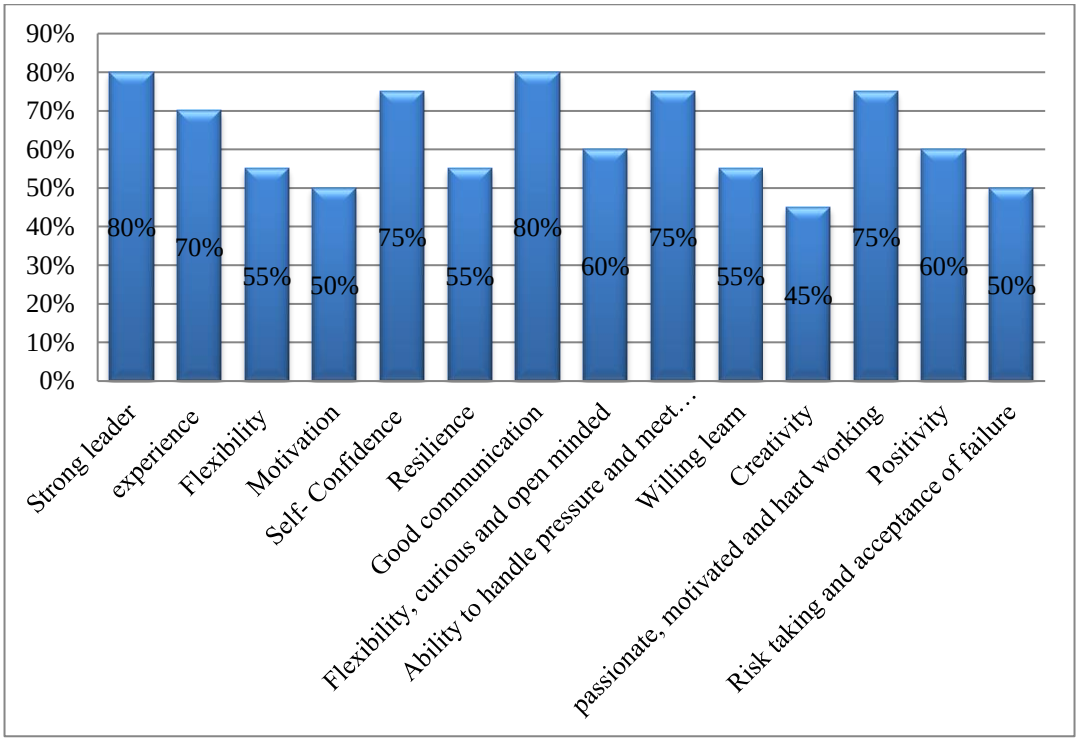


Figure 4.15. The strongly agrees on PM personal characters data from respondents.

Fig. 4.15 illustrates that this figure strongly agrees with the personal characteristics of a building project manager. They are characters with a percentage rate of more than 70%. Fig.

4.15 will be used to extract them and extend their rationale to Fig. 4.16 as shown on the Fig.4.16 bellow.

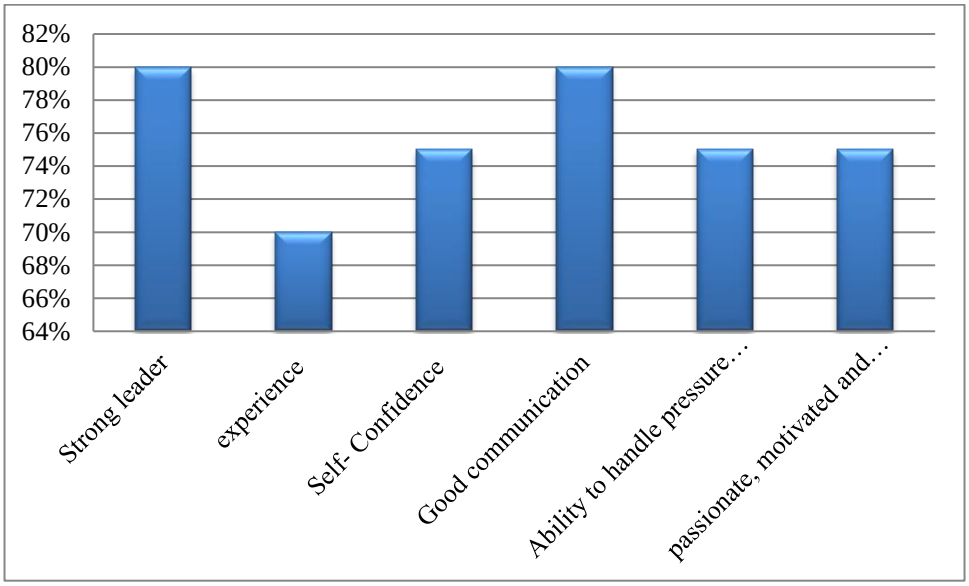


Figure 4.16. Strongly character for PM.

Construction leader has many values, so/her character should be something that has to be taken with care. They are different characteristics for him or her to have, therefore, in this research the author extracted them from what the respondents pointed out with a high-rate percentage above 70%. As shown in Fig. 4.16, strong leadership is pointed on high rate as project manager personal character with a rate of 80%, the experience in the field also has 70%, self-confidence in his her works got 75%, good communication is 80% strongly agree that a project manager should have a very good communication way because project management is mostly all about communication, ability to handle pressure and deadline has 75% because the construction project in progress, pressure is released and all the work are done according to the deadline. 75% strongly agree that a project manager is a passionate, motivated and hardworking person in the construction industry.

The next part provides descriptive statistics on how a project manager's personality affects the project's success.

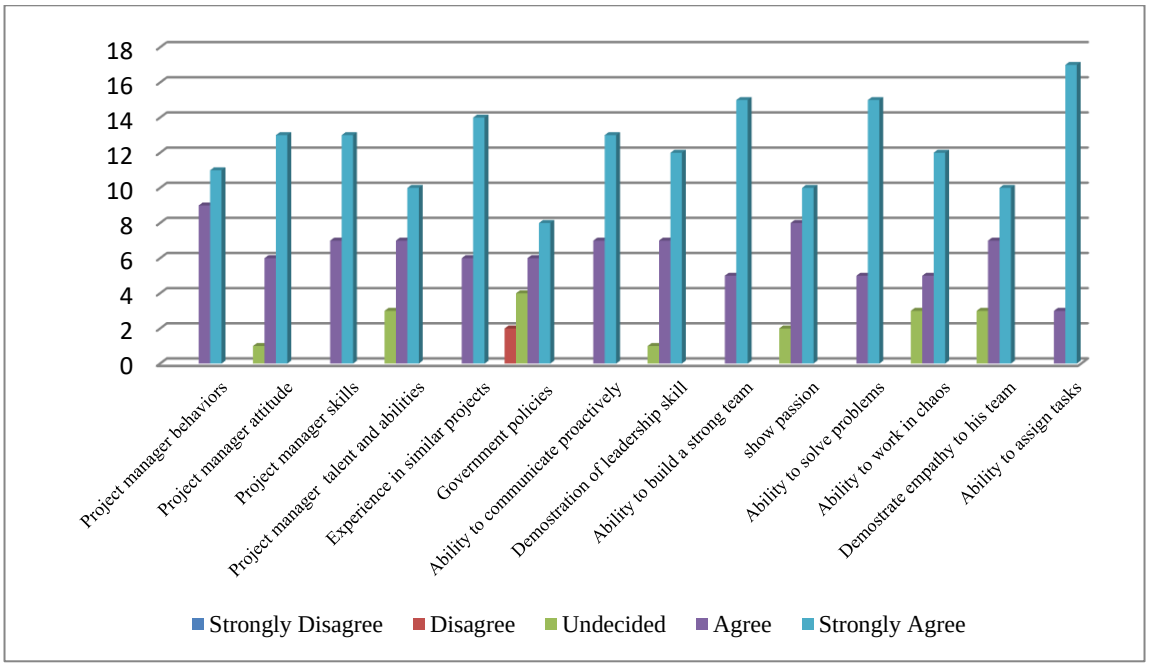


Figure 4.17. PM characters influencing success of project.

Fig. 4.17 illustrates how a construction project manager's personality might influence the project's success owing to a variety of reasons. Many respondents strongly agreed that a project manager's behaviour, attitude, skills, experience, talents, communication, ability to build a strong team, ability to solve problems, and ability to assign tasks to his or her team can affect a project's success depending on how they are used, and the result can be accordingly.

When a construction project is in process, the project manager's contribution begins at an early stage of the project's execution. Findings on project manager strong contribution in variety construction stage.

a. Planning Stage

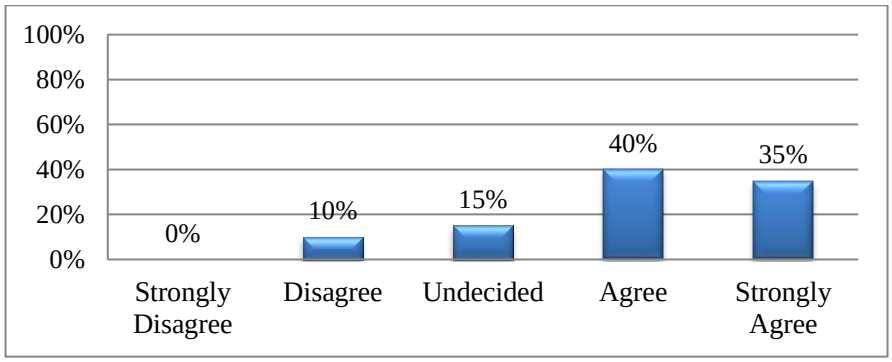


Figure 4.18. PM Contribution at planning stage.

Regarding the planning stage of a construction project Fig. 4.18 the majority of respondents agreed that a project manager's responsibilities begin at this point and that this is the most important job he or she plays, with 35% strongly agreeing and another 40% agreeing. 15% of those polled were undecided, and 10% disagreed.

b. Design Stage

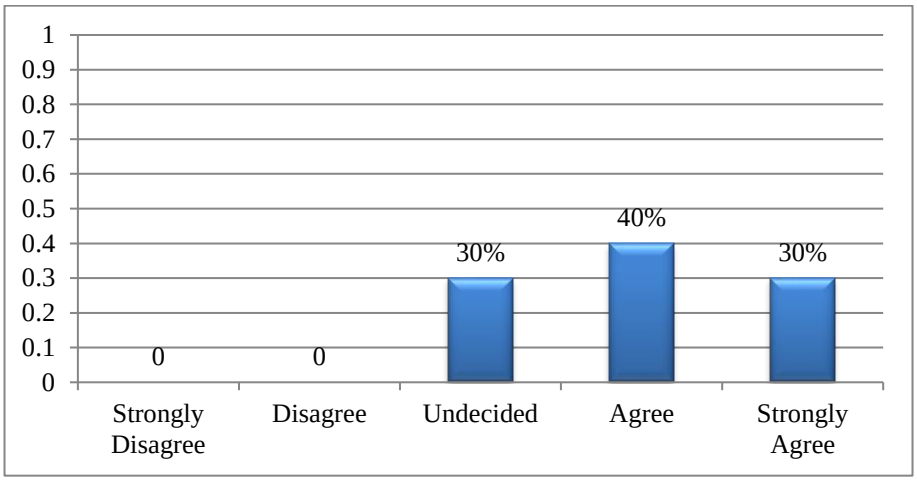


Figure 4.19. PM contribution at design stage.

As indicated in Figure 4.19, 30% and 40% of respondents strongly agreed and agreed respectively, while 30% were undecided about the project manager's role in the design stage. However, 70% of respondents felt that the project manager plays a critical role at this stage.

c. Pre-construction Stage

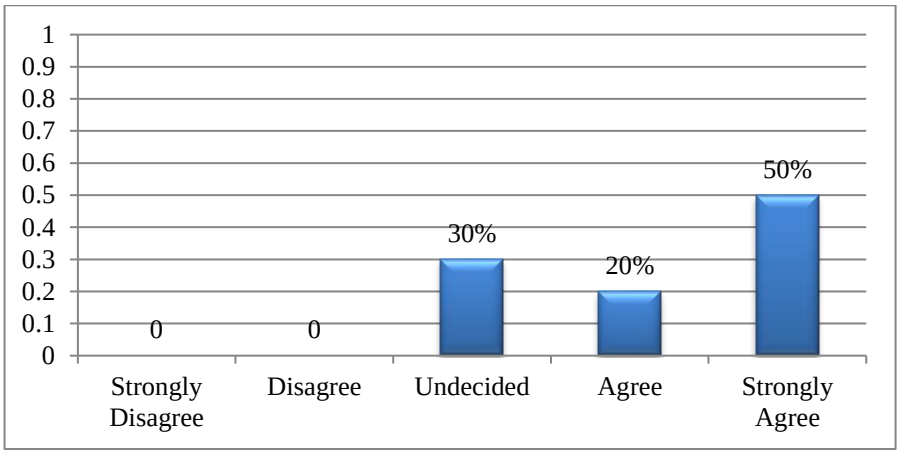


Figure 4.20. PM contribution at pre-construction stage.

Fig. 4.20 illustrates that most of the respondents agreed that a project manager plays a major role in the pre-construction stage using different techniques & skills. 50% of the respondents strongly agreed and 20% agreed with it. Only 30% of the respondent was undecided about it.

d. Procurement Stage

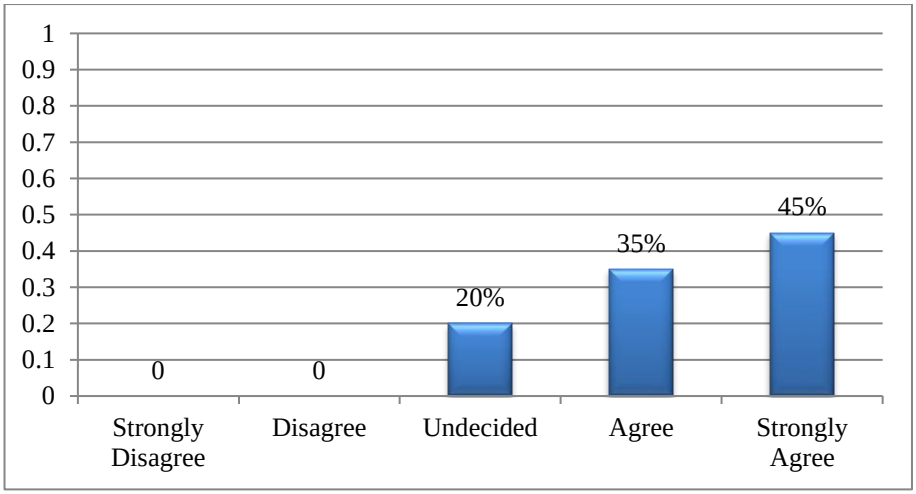


Figure 4.21. PM contribution at procurement stage.

The above Fig. 4.21 illustrates that the project manager has a big role in the procurement stage, as 45 percent and 35 percent of respondents strongly agreed and agreed that he plays a significant role in this stage. To say the least, the 20% of respondents who are unsure is a modest percentage.

e. Construction Stage

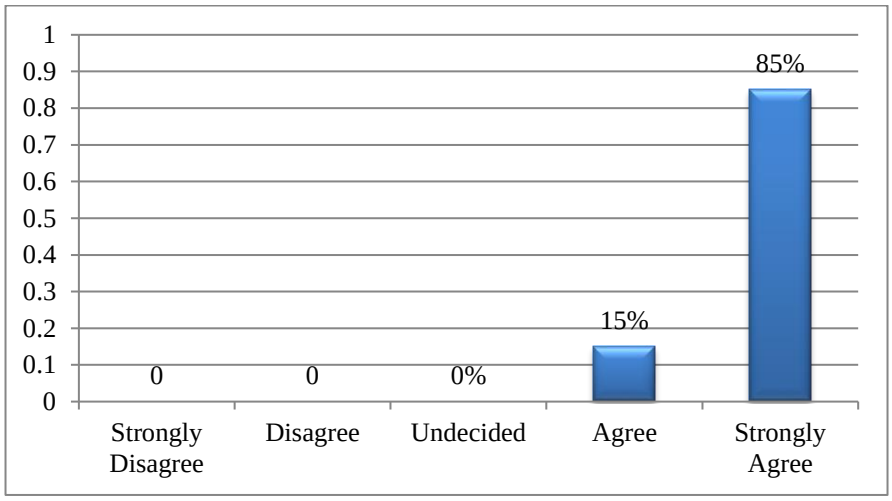


Figure 4.22. PM participation at construction stage.

According to the graph above Fig. 4.22, 85% of respondents highly agreed with the project manager's participation at this stage, while 15% only agreed. This demonstrates how important a project manager is during the construction process.

f. Post Construction Stage

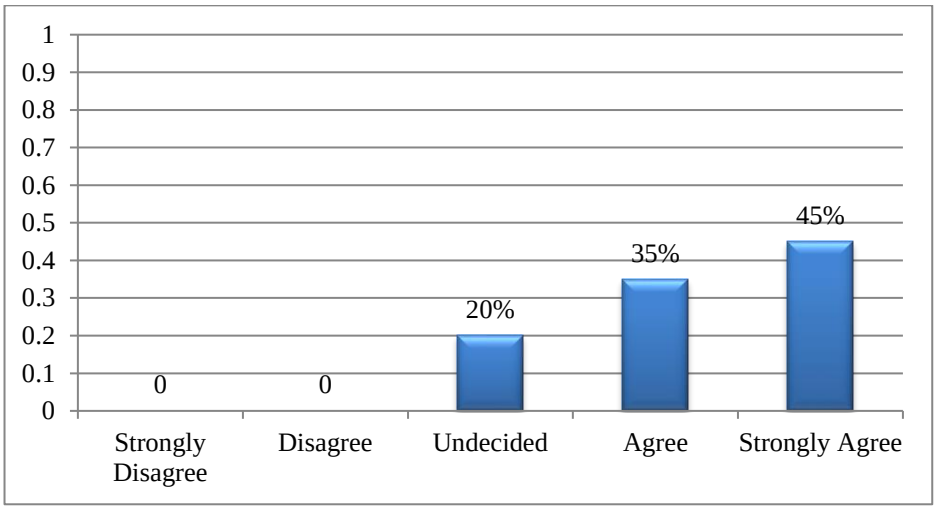


Figure 4.23. Post construction PM contribution.

After the construction phase, a project manager's duties continue as shown above in Fig. 4.16, therefore a total of 80% of the respondents agreed, this includes 45% strongly agreed

and 35% agreed with the project manager's contribution at this stage, and also 20% were undecided about it.

The following diagram was created by combining strongly agrees and agrees to see how the project manager's role and participation varied at different stages and where he had the most influence.

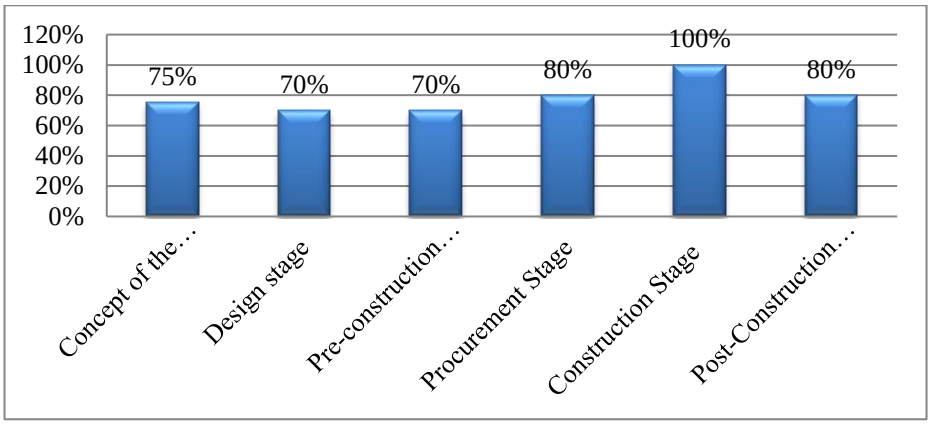


Figure 4.24. Project manager strong contribution phase for a project.

The above Fig. 4.24 shows the project manager's involvement in each stage, and where his or her strong contributions are tightened. However, a large number of respondents strongly agreed that a project manager's skills and techniques are more used during the construction progress phase.

Project manager and six limitations.

We focus on the majority of the constraints that the Project Manager develops and constructs attraction.

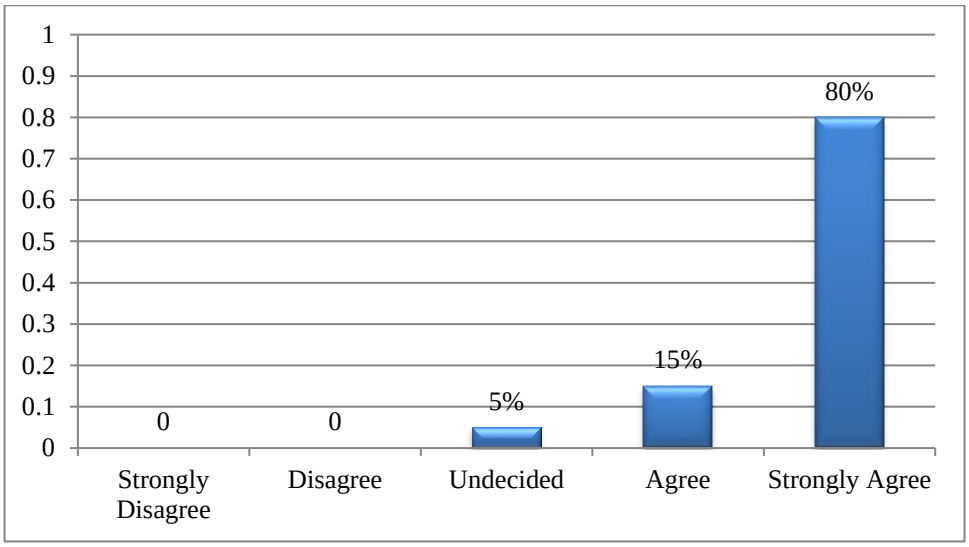


Figure 4.25. Project manager influences to time.

Because the majority of respondents strongly agreed that a project manager affects the time of a construction project, 15% agreed, and 5% were hesitant, this indicates that the project manager is overly committed to the project's timeline.

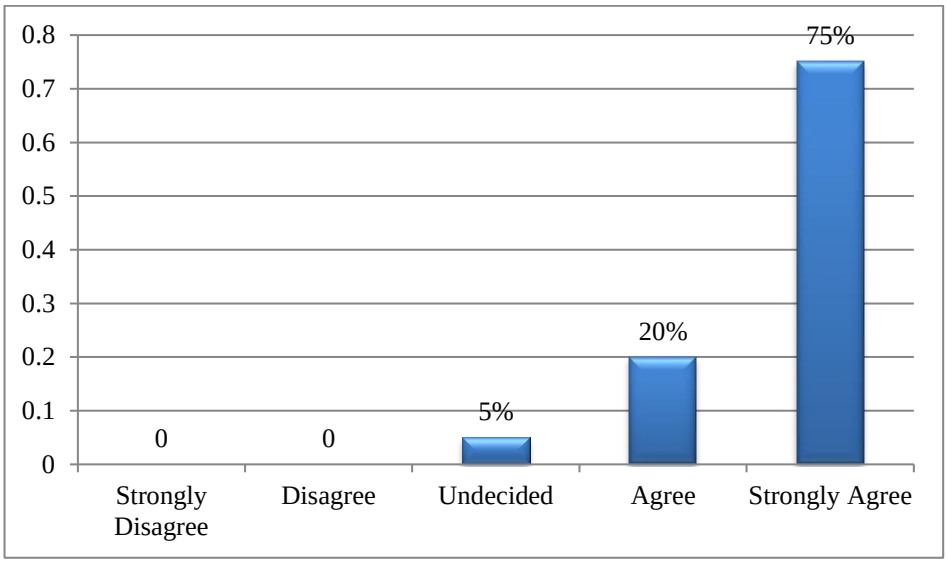


Figure 4.26. PM monitor cost of project.

A construction project manager plays a big role to maintain the project budget, therefore the respondent’s answers shows that 75% strongly agreed that a project manager is more

attached to it, 20% only agreed and 5% were undecided on the matter as shown on the above Fig. 4.26.

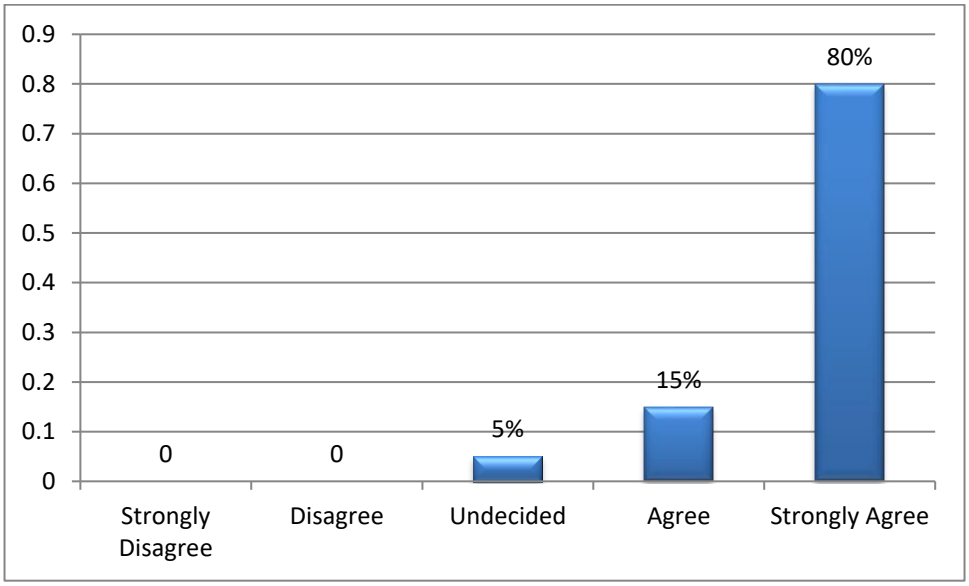


Figure 4.27. PM monitor project quality.

As illustrated in Fig. 4.27, 80% of respondents strongly agreed that a project manager is more concerned with the project's quality, 15% agreed, and 5% were undecided. This proves the point, the concerns regarding the project's quality have been raised by the project manager.

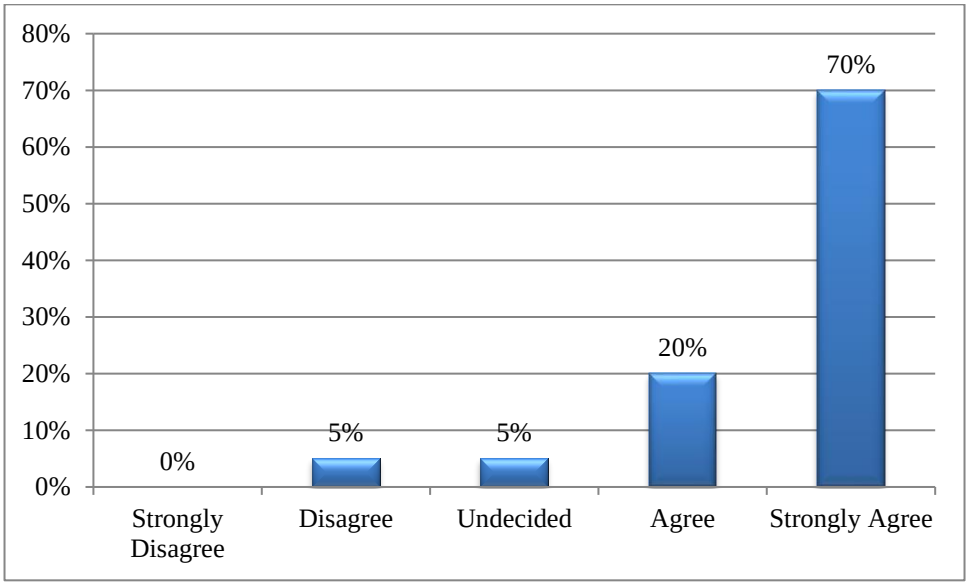


Figure 4.28. PM and project safety constrains.

Fig. 4.28 shows that 70% of the respondents strongly agreed that a project manager is more attracted to safety on, 20% agreed, 5% undecided and 5% were disagreed about it.

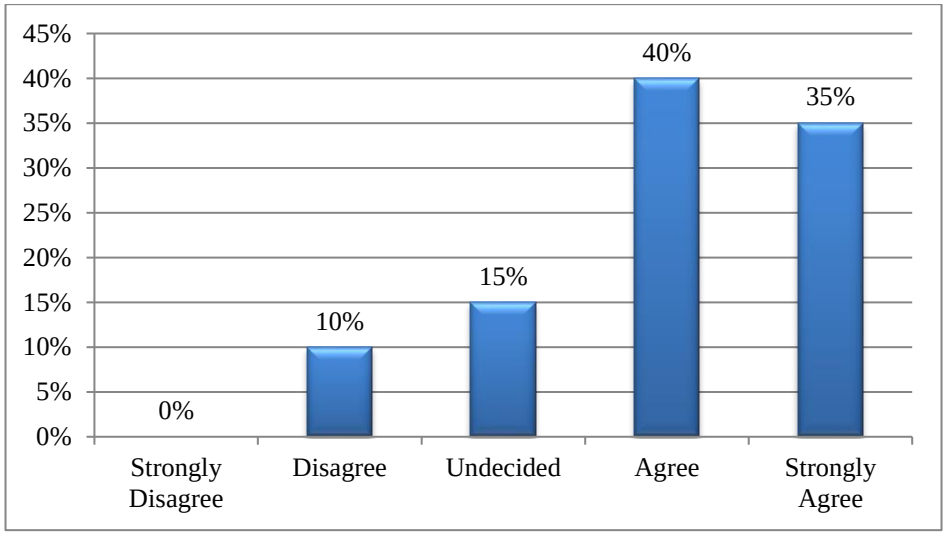


Figure 4.29. Project manager and aesthetic value.

Fig. 4.29 shows that 35% strongly agree that a project manager focus on aesthetic value of a construction project, 40% agreed about it, 15% were undecided and 10% of the respondents disagreed about it.

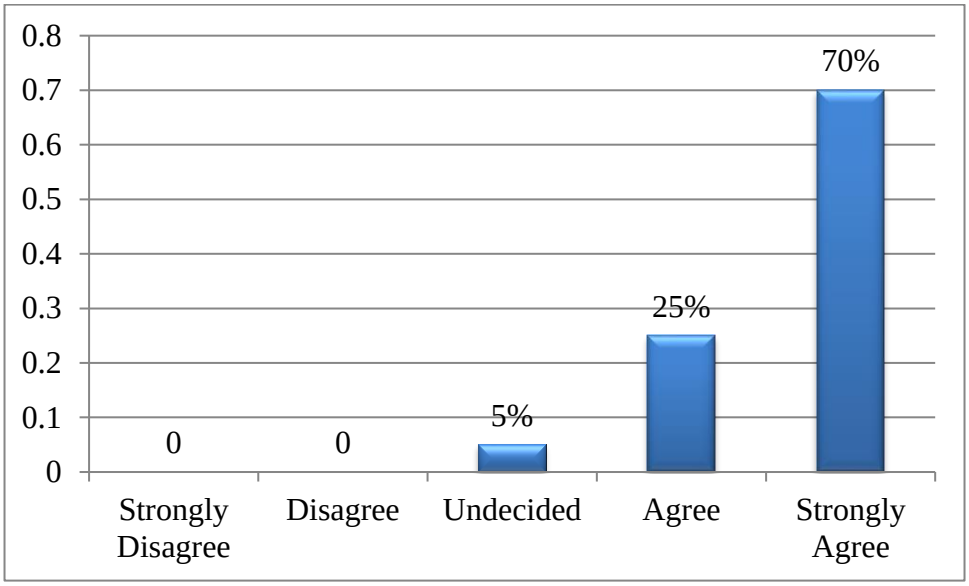


Figure 4.30. Attachment between Scope of work and PM.

Fig. 4.30 is seen above. Show how respondents feel about the link between a project manager and the scope of construction work. This reveals that 70% of respondents strongly agree that project managers are too tied to the scope of work, 25% agree but are undecided, and 5% are undecided.

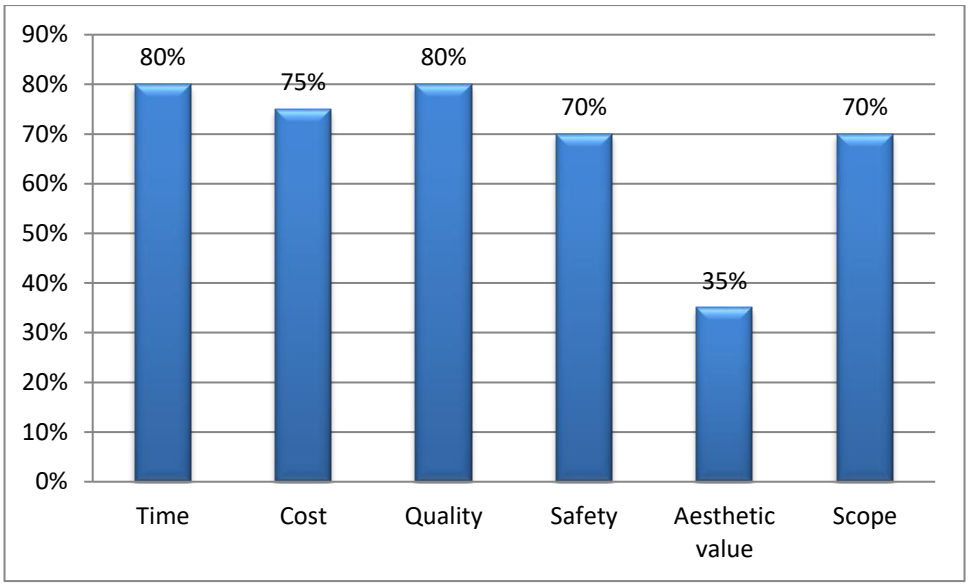


Figure 4.31. Six constraints and pm relationship.

From the start of a construction project until it is completed to a satisfactory degree of satisfaction, the project manager focuses on several constraints. Therefore, the study shows that the respondents the first three element that a project manager is too attached or should be more focus on them for a project to achieve its goals. As seen in Fig. 4.31. In order to avoid delivery delays, 80 percent strongly agreed that a project manager should pay more attention to project duration. To avoid going over budget, 75% of respondents strongly agreed that a project manager should pay close attention to the project's cost and control and coordinate how it would be used according to the materials and specifications provided. Eighty percent also agreed that a project manager should make every effort to ensure that the project's quality is maintained.

The three pillars of project management that a project manager should focus on are planning, controlling, and coordinating. As previously stated, a project manager's job does not cease

after the building is completed. His job continues, though not as intensively as it was during the previous construction period. As a result, the project manager employed his management techniques to complete the project, and respondents were asked how satisfied they were with the progression of the delivery methods.

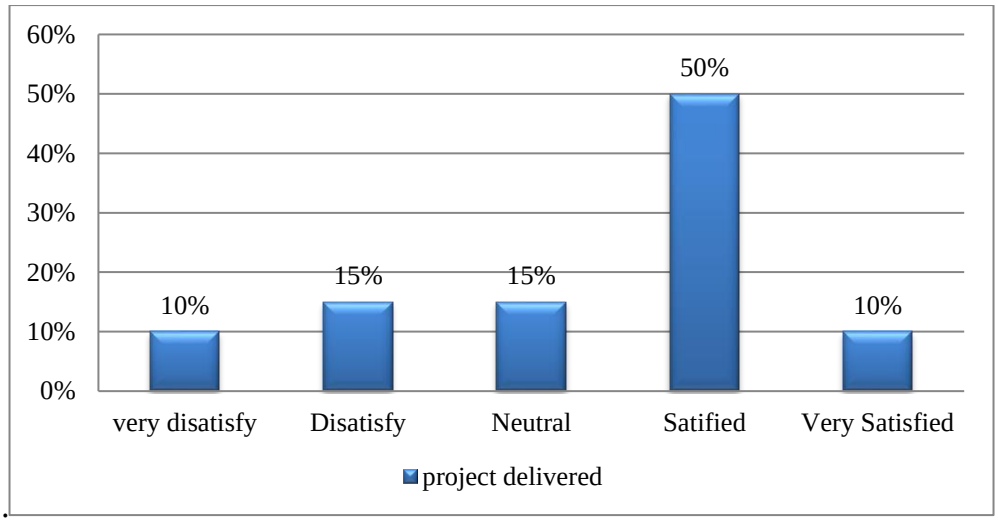


Figure 4.32. Satisfaction of project delivered by PM.

The above Fig. 4.32 shows how satisfied respondents were with how the project was delivered utilizing various project management methodologies; the data reveal that approximately 10% were extremely satisfied and 50% were satisfied. As a result, many respondents were pleased with how the project manager applied his talents and tactics to accomplish the project on time and within budget. On the other hand, 15% were indecisive, 15% were unsatisfied with the delivered project, and 10% were extremely dissatisfied with it.

To measure the worth of a project manager in the construction sector different factors can be allocated, therefore the following figure illustrates the functions that a project manager plays in construction and scales up his values in construction,

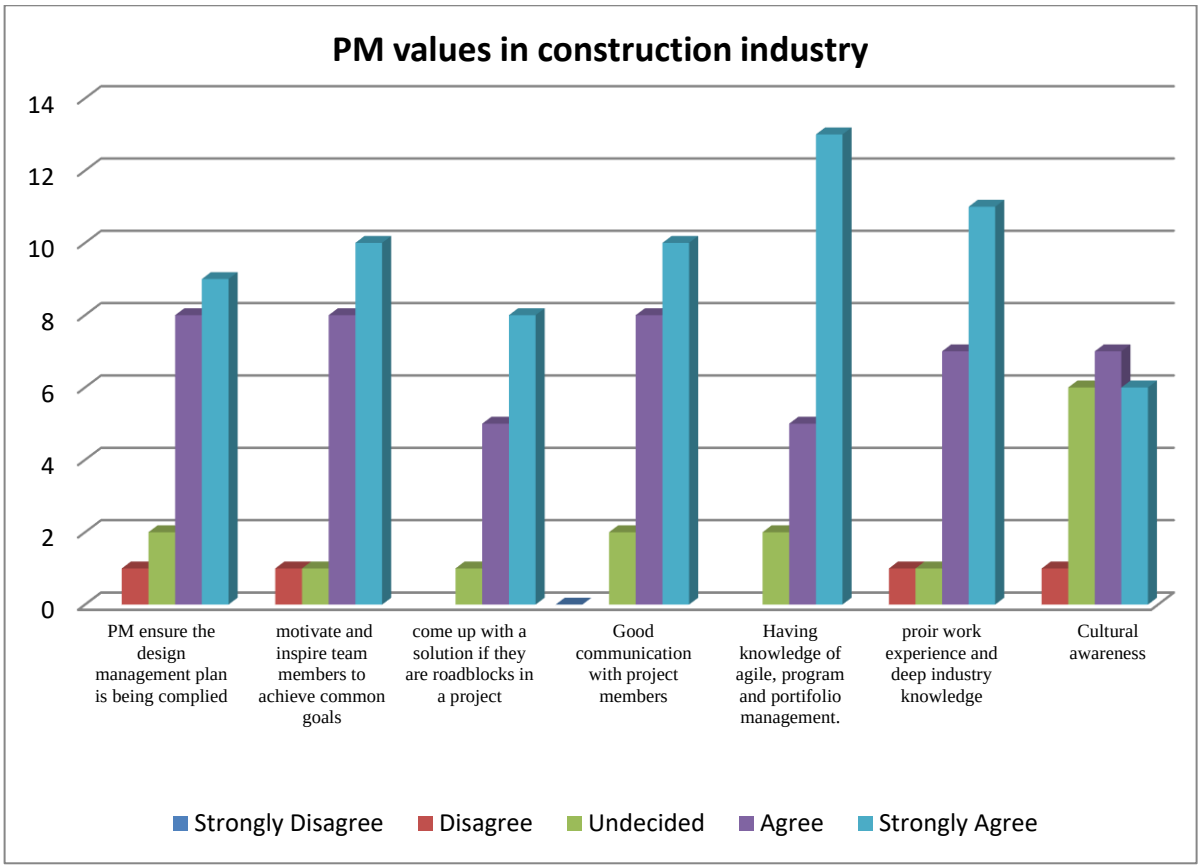


Figure 4.33. Project manager's value in construction.

The above Fig. 4.33 Shows that the respondents strongly agree that the project manager's values include, ensuring the design management plan is being complied with, developing the design program to include the submission dates, motivating and inspiring team members to achieve the common goals, coming up with a solution, manage good communication with the project members, knowing the agile program and portfolio management, work experience and deep industry knowledge, which help him to understand the techniques to be used on a project, cultural awareness to avoid miscommunication and conflicts on the project while has already started.

5. DISCUSSION

Many discussions about how a project manager provides services which lead the project to its success were discussed and his values were highlighted, to maximize projects' chances of success a project manager is needed who is able to plan, coordinate and execute construction works[40], this emphasis that the project manager's contributions are needed from the earlier stage of the construction as this research results shown in the above figures. A project that is completed successfully, project manager's values include completing projects on schedule, on budget, and with high quality[24]. This demonstrates how important a construction project manager's approaches for planning, scheduling, and directing the project are to the project's success, the manager focuses on those three keys of the project which are the centre of the project's success, this going similar to the Fig. 4.31 demonstrates among the project manager values his high priority should focus on the three points.

A transaction is defined as a value exchange between two parties. Things of value do not have to be confined to products, services, or money; they can also include time, energy, and feelings "[41]. For a project to be successful, a project manager should have several attributes that ensure its success. The success or the failure of a project depends on the manager even more than it is determined than the team leaders[42]. The discipline of project management as defined by the use and interpretation of several terminologies such as project management, project organization, and project team[43].

Value is usually thought of as utility (functionality, as in value management) - use-value -, which underlies exchange value - the price at which a transaction takes place. According to neoclassical economics, everyone is rational and seeks to maximize utility (satisfaction/profit) for himself[44]. Five functions of a manager: to plan, to organize, to coordinate, to control, and to direct or command[45]. To achieve the goal of increasing project value, maximizing project value entails balancing the trade-off between project, and business value, two values that the project manager and client are continuously battling over[46]. A project manager is assisted by different set of instruments where his values

provide adequate approach in a direction which meet the requirements of further project quality result[47].

The United States Department of Defence created contemporary project management concepts and fundamental procedures in the 1960s[24], eventually that evolved approach to project manager and emphasis on effective project delivery was perceived as being on schedule, within budget, and to specification, and required a project manager to oversee, control, and organize. The three most critical issues for a project manager are money, time, and quality. The traditional method of thinking about projects has influenced perceptions on project management solely as a technique of planning, scheduling, and regulating activities and resources.

Among the project manager values is that the project manager is front line man who build a team by defining men who play role day-by-day progress of a construction project, that character is leadership and build a strong team[47]. This emphasises the research contribution as shown in Fig. 4.15, the project manager should use his leadership skill to bring all his value to the project. A project manager's project value attitude turns out to be a key contributor to project success.

Building project managers' performance can be improved by providing motivators that align with their human values. Their findings show a strong link between ambition and bravery, ambition and responsibility, responsibility and honesty, broadmindedness and helpfulness, politeness and helpfulness, and capability and independence[38]. project manager provides bigger clear image of a project, his values like having superior skills on project, build and maintain effective team dynamic, communication is effective on a project, the job is done with a target, narrow all works to the clients satisfactions, safety of the project is controlled, project problems are solved in a calm way, leading the project team members to achieve project goal which are on time, within budget and with maximum quality[48].

6. CONCLUSION AND RECOMMENDATION

The construction sector has numerous problems; for example, project managers in some nations may be unqualified for the role. The project may confront a number of issues, including over-budgeting, project delays, and poor quality. A project manager's values are met when he is a qualified person in that position, not only someone with good communication skills but someone with project management skills and techniques lead to the satisfaction of all parties involved in the project. Project manager who is qualified on the position demonstrate with a high speed the values and benefits of his position when his results using management skills gives values not only to the client but also the contractor or consultant whom he works for, therefore project manager values are measure on how he did it, what he did.

A project manager is an essential component of any project's success since he or she is responsible for ensuring that the project is completed on time and within budget. The numerous strategies and talents employed to reach the project aim reflect his or her values. The findings of this study demonstrate the values of a in the construction sector, a project manager is a person who is in charge of. Whether you are a contractor, consultant, or client, you will need a good project manager to keep things moving along smoothly in different stage of a project. Project manager provides hope for a project especially when that person has exact character on the person to play that role. Project manager has a hardship role but the results of the project bring value of his position and balance between project need and other parties,

Whenever choosing a construction project manager, clients should recognize his beliefs and the profits, he will bring to them, rather than merely hiring at random. According to the research, the most typical solution for a successful project is one that has a proper project manager that understands project management procedures and provides overall quality service. I recommend also some technical and engineering schools to give more wide view to their students of how to become a good project manager and for those project managers

who are in the industry have to follow continuing professional development and keep updating their knowledge in the field by reading the new version of the guidance in management mostly nowadays the most common project management guidance are PMBOK and ISO 21500, project managers to maintain their values in construction their have to read and understand those guidance from those books. Project managers should maintain their name and values in the industry by delivering the project on scheduled time, within a budget and at the maximum quality of the specifications.

Since we have seen that experience is a key character that brings project managers value, beginners in the industry should be given a chance because everything has a starting point, try to understand students who need training, train them, and give them a chance to become successful in their careers as well. Researcher are facing problem when gathering information about their surveying, schools or government should provide a platform which gather all the professionals in different careers, for the future researchers to get information from them, that platform should be for the researchers especially those using questionnaires. Respondents should be flexibles to answer since the researchers are working on deadline.

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8. APPENDICES

8.1. APPENDIX. 1 QUESTIONAIRE

The goal of this survey is to learn about the values that a project manager must possess in order to complete a successful project in the construction sector.

To both parties working on a project, the questionnaire findings and accompanying analysis will provide all information about the values of a project manager in construction.

Throughout the this questionnaire it is composed by 4 section, section A regarding personal information, section B character of a project manager and his values for a project , Section C composed by satisfaction of the delivered method for a project by a project manager.

1. PERSONAL INFORMATION

a. Gender:

MALE	FEMALE

b. Education Level:

- Bachelor level
- Masters level
- PhD level
- other

c. Working Experience.

Less than 1year	1-2 years	3-5 years	6-10 years	10-20years	21 year more

d. Work-in Company.

Client	Contractor	Consulting

e. When was Project management course taken.

After bachelor level	After master's level	After phd	Different learning course

2. PROJECT MANAGER CHARACTERS

A project manager in the construction industry is characterized by many characteristics but the listed is a summary of them:

- Strong leader

'A good project manager to provide good result his leadership skill should be stronger'

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Experience

'A good project manager should have experience in the industry to provide good services and deliver project with quality.'

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Flexibility

'A project manager should be characterized by flexibility in his work''

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Motivation

‘Project manager should motivate his team members to work until the project is delivered’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Self-confidence

‘Project manager should have self confidence in his work ‘

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Resilience

‘A project manager should be resilience to recover quickly from depression and other ‘

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Good communication

‘Project manager should be characterized by good communication’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Ability to handle pressure and meet deadline

‘Project manager should have the ability to handle pressure and meet deadline of his work’'

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Willing to learn

‘Project manager to always have hunger to learn and will, from new system and different people’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Creativity

‘He should be creative in his work process ‘

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Passionate, motivated and Hard worker

‘Project manager should be passionate, motivated and hard work person ‘

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Positivity

‘Project manager should see all thing in positive way , so it can be easy for him in decision making’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Taking risk and acceptance of failure

‘A project manager is a risk taker person who accepts failure and quickly find a solution to solve it’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

The value of a project manager's participation is recognized at several stages of construction:

- Planning phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Design Phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Pre-construction Phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Procurement Phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Construction Phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Post-construction Phase

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

3. PROJECT MANAGER CONSTRAINTS VALUES

A project manager must perform multiple roles in order for his values to be recognized by other parties, and his values are influenced by various construction limitations.

- Time

‘A project manager is influence by time of the project’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Cost

‘Project manager’s value is narrow by The cost of the project ‘

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Quality

‘Project manager should narrow his energy on the quality of the project,so his values can be marked’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Safety

‘Project safety should be focused on by project manager to add his value’

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Aesthetic

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

- Scope

‘The scope of project, a project manager is narrowing his effort on it to deliver a project on time.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

4. PROJECT DELIVERY SATISFACTION

How the project manager employed management methods and projects to be delivered with satisfaction is a good approach of managing project manager value.

Previous project was delivered by Project Manager with satisfaction of all parties?

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

-End-

Please use the text box below if you have any questions, feedback, or something to add. Thank you for taking the time to complete the survey. Thank you for taking the time to respond**.**

CURRICULUM VITAE

PERSONAL INFORMATION

Name Surname : Hamza Patience MUZAMUZI

[redacted] : [redacted]

Language : English, French and Turkish

EDUCATION

Degree	Area	School/ University	Graduation year
Masters	Civil Engineering	Duzce University	2022
B.Sc.	Quantity Surveying	University of Rwanda	2016
High school	College Saint Andre	College Saint Andre	2011

PROFESSIONAL EXPERIENCE AND REWARDS:

May/2022 : Two Certificates of participation at 1st International Conference on Engineering and Applied Natural Science (ICEANS) at Konya /Turkiye. Article 1 pg. 727-733, article 2 pg. 735-743, ISBN 9786250092781

Oct /2015-Oct/2019 : Assistant construction project manager at New Century Development.