

# **Key Success Factors for Successful Delegation in Construction Project Management**

## **Master Thesis**

**International Master of Science in Construction and Real Estate Management  
Joint Study Programme of Metropolia UAS and HTW Berlin.**

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**Mr. Awotimiro Temitope Julius**

572522

First Supervisor: Architect, Eric Pollock

Second Supervisor: Prof. Dr. Roode Liias

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## Conceptual Formulation



### **International Master of Science in Construction and Real Estate Management**

#### **▲ Joint Study Programme of Metropolia Helsinki and HTW Berlin**

**Date:** 06.03.2020

#### **Conceptual Formulation**

**Master Thesis for Mr. Awotimiro Temitope Julius**

**Student number:** 572522

**Topic: key Success Factors for Successful Delegation in Construction Project Management.**

#### **BACKGROUND TO THE STUDY**

According to PMI, a project is defined in the Project Management Body of Knowledge -PMI (2004 edition) as "a temporary effort to create a unique product, service or result". Nearly all construction industry events are project based. Studying this fact, it is very vital for the key members in a construction project to be expert in the field of monitoring, management and project control thereby making the ongoing project successful. Key recipe to a successful project is to be general for all types of projects, but certain other aspects are believed to be more unique to the construction industry such as the type of projects, project complexity and further characteristics of a project.

As competitive as the construction industry is, the construction industry is considered as a proportion of the major economy of some developing countries like Nigeria. Therefore, failure in this sector has a negative influence on the countries business and its economy. Thus, assessing the key success factors in project delegation is vital to improve project management in the construction industry.

The key success factors will vary according to project size, design, and even complexity, also the company involved in undertaking such project. However, such factors can be grouped and further investigated using Key Performance Indicators (KPIs) to track the performance and determine how successful those projects are.

The fragmented nature of the construction industry which involves varieties of enterprises engaged in different activities such as the design, building/construction, mechanical and electrical services, operation and maintenance companies, etc in a single construction project requires efficient coordination and management to be able



to achieve a successful project through successful delegation to various team members/enterprise involved in such project. There have been great number of researchers who had studied factors that affect project success, and the principles to measure project success but fails to take a significant look at the role of a project leader in delegating for a successful project.

According to the analysis stated earlier, it is obvious that there many factors affecting project success. Hence, this study will assess the key success factors for successful delegation in construction project management and it will focus on the relation between effective project delegation strategy in increasing the likelihood of project success and the complexity of the construction project. Therefore, the proposed questions are:

- 1) What are the factors that influence project success?
- 2) What is the significance of delegation to project success?
- 3) What is the effective project delegation strategy?
- 4) Is there a relation between effective project delegation strategy and the complexity of a construction project?

## **METHOD**

In this research, internet-based research will be conducted to obtain information from published journal articles, conference proceedings, academic report, etc. In addition, a well-structured questionnaire will be prepared and tested afterwards. The questionnaires will be sent to key personalities (Engineers, project managers) in different construction companies in Lagos, Nigeria obtained parameters will be analysed and compared to the information in the literature review.

## **TIME SCALE**

The time frame will be within the period allowed until the final submission of the thesis. However, all reviews, questionnaire administration and analysis of data will be concluded as follows:

- i. Conceptual formulation final draft: March 2020 – June 2020
- ii. Literature Review: June 2020 – December 2020
- iii. Quantitative data gathering: May 2020 – March 2021
- iv. Thesis 1<sup>st</sup> draft: March 2021 – May 2021



- v. Thesis 2<sup>nd</sup> draft: May 2021 – June 2021
- vi. Thesis final submission: June 2021 – July 2021
- vii. Presentation/examination: July 2021 – September 2021.

## RESOURCES

Since the research is internet based, hence all required resources will be made available over the internet (e-library, google scholar). The questionnaires will be sent to responder via email and if need be, for further interview, it will be conducted through internet video calls (skype) this will avert the cost of traveling to Lagos, Nigeria unless if need be.

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Signature of the 1<sup>st</sup> Supervisor

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Signature of the Supervisor

## **Abstract**

The construction industry is tasked with the obligation of delivering construction projects within a budgeted sum according to an estimated contract sum. Professionals in the construction industry aim to satisfy the ever-growing requirements of the client by employing various project management strategies out of which is delegation in regards to roles, skills, competencies and so on. In order to bring these management policies into a functional state, success factors in regards to delegation towards construction projects was taken into consideration so as to achieve successful project delivery and sustainable project at the long run. With this, the research aimed at assessing the key success factors for successful delegation in construction project management as it also centered on the connection between effective project delegation strategy in increasing the project success verisimilitude and the construction project complexity.

The literature aspect of the research gave in-depth view of already published articles, journals, publications as well as other relevant documents regarding bringing to understanding the success factors in achieving successful project management through delegation process. It covers exclusive inferences from previous researchers as well as analysis to back it all up. The analytical method employed was quantitative in nature as construction professionals were sent electronic questionnaires to fill out in Lagos state Nigeria. The analysis obtained gave an inference where 57.8% of the respondents admitted to have participated in the use of delegation process while carrying out construction projects. Furthermore, sampling the respondents in respect to influencing factors of project success across the phases of construction project; environment ranked the most effective influencing factor with a mean rank of 3.98, standard deviation of 1.208 and the least factor being identified as organization with a mean and standard deviation of 2.52 and 1.151. In discussing project factors affecting construction success, complexity of project ranked the highest with mean and standard deviation of 3.80 and 1.095 respectively. Control mechanism and implementing safety programs led the project management actions affecting project success with mean ranks and standard deviations of 3.70, 0.918, 3.65 and 1.111 respectively. External environment factors affecting project success correlated with each other as factors highlighted gave a

coefficient correlation lesser than 1. This proved the interrelationship among the factors stated. Conclusively, it was deduced that the management contracting (MC), design-build/finance/operate (DBFO), and construction manager as constructor (CMR) are the highest ranked critical success factors for different project delivery methods with mean ranks of 3.58, 3.57, 3.49 and standard deviation of 0.908, 0.995, and 0.800 respectively. These project deliveries are factors that aid for successful delegation in project management with every method having a mean rank greater than 3.00.

It is concluded that the construction professionals in the Nigerian and the general construction industry should inculcate the act of delegating activities in construction from the onset of operation to completion of project. The delegated functions will in turn spun the construction team to want to get better at whatever function and from such, there is a transfer of knowledge and development is bound to occur under such situation. Development of a firm depends on how well a task is been delegated, so it is recommended that delegation process should be properly carried out and evenly distributed for a better project delivery and success within a set contract duration.

**Keywords: Project delivery; success factors; project success; delegation in construction**

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**List of Abbreviations**

CSF	Critical Success Factors
DBB	Design-bid-build
CMR	Construction management at risk
DB	Design-build
BOOT	Build Own Operate Transfer,
BOT	Build Operate Transfer
DBFO	Design Build Finance Operate
BLT	Build Lease Transfer
IPD	Integrated Project Delivery
PPP	Public-Private-Partnership
D&C	Develop and Construct
MC	Management Contracting
CMR	Construction Manager as Constructor
EPC	Engineering Procurement and Construction
DBFO	Design-Build/Finance/Operate

## **CHAPTER ONE**

### **1 Introduction**

#### **1.1 General Introduction**

This chapter emphasizes the significance of the research's context. It begins with an overview of the proposed research's background, statement of research problem, justification for the research. The aims and objectives of this study further expressed this with a methodology adopted summary. The structure and content conclude the research.

#### **1.2 Background to the Study**

In a preliminary study, the identification of the relationship between key success factors and various attributes (systems) concerned in construction is important to project success. The essential key or critical success factors will directly have impact on the successful delivery of the project and its subsequent management practices. It is no more news that construction industries now have dynamic approaches towards tackling demands concerned with construction as the industry is practically involved in one of the most vibrant aspect of the environment. Therefore, the further introduction of these approaches and dynamism has increased the productivity of the construction industry as it builds towards sustainability in effective project management (Salleh, 2009).

According to PMI, a project is defined in the Project Management Body of Knowledge - PMI (2004) as a temporary effort to create a unique product, service or result. Nearly all construction industry events are project based. Studying this fact, it is very vital for the key members in a construction project to be expert in the field of monitoring, management and project control thereby making the ongoing project successful. Key recipe to a successful project is to be general for all types of projects, but certain other aspects are believed to be more construction industry-specific such as the type of projects, project complexity and further characteristics of a project.

According to Kolawole (2002), the Nigerian construction industry is unique, it is necessary for the survival of other industries because it creates the environment in

which they can operate. Balogun (2007) stated that the industry said that the industry accounts for 61 percent of the country's GDP and employs up to 20 percent of the workforce, as well as that the industry is extremely diverse, contractors' range in size from a few large multinationals with hundreds of employees to the great majority of local companies with fewer than ten employees. As competitive as the construction industry is, the construction industry is considered as a proportion of the major economy of some developing countries like Nigeria. Therefore, failure in this sector has a negative influence on the countries business and its economy. Thus, assessing the key success factors in project delegation is vital to enhance project management in construction industry.

Moving towards an intensive information development is one of the contemporary society's transition patterns. The expansion of the information industry has complicated the process of making good administrative decisions. As a result, the delegation of authority procedure is underway and its relevant success factors are currently becoming vital in decision-making management (Vladimir & Olga, 2016). Aside from an emphasis on the appropriate application of scientific and technical knowledge, investment and funds have become essential delegation factors for concentrating on the companies with a management structure that is defined by a reduction in management levels, a reduction in the number of top and intermediate managers while simultaneously improving the quality of the workforce.

The construction industry is swiftly becoming that which encompasses different fields in Construction management, engineering, cost control, and financial planning, as well as computer-aided facilities management, knowledge management and so on in the implementation of construction project (Taofeeq et al. 2020). As the industry is putting in place various measures towards successful project management in terms of technologies and all, the industry should also work towards imputing further management practice in delegation and its success factors in order to have construction projects that satisfy every aspect of standard. This and efficient coordination by construction team will enable construction workers in Nigeria and other construction countries to achieve a successful project through successful delegation of various



activities concerned. These activities come in terms of factors to be solved in order to have a project successfully managed, construction for the client. It is obvious that there are many factors affecting project success. Hence, this study assessed the key success factors for successful delegation in construction project management and focused on the relationship between effective project delegation strategy in enhancing the success of a project and the building project's complexity.

### **1.3 Statement of Research Problem**

The complexity of major construction projects affects construction processes according to Jaafari (2001), Tah and Carr (2000), Chan and Scott and Chan (2004). Owing to the complexity of Construction projects, it is of high necessity when forming the organization and components to identify with successful factors, to have personnel with experience on projects in order to deliver that which is of the required standard. "Monitoring" as a success factor settles the necessity for performance measurement as indicated by Salminen (2005) and Chan and Chan (2004). Notwithstanding, majority of the preliminary deliberated performance indicators in their researches are vital and useful as they enable success in future project (in relations to cost, time and quality) and an overall corporate success. Relatively this is the same to what Cooke-Davies (2002) concluded on regarding achieving a consistent success in projects and corporately. The high probability that directors and specialist tend to emphasize the need for common and comprehensive monitoring process than projects managers may probably be because the Project managers are usually in charge of their projects on a day-to-day basis thereby using monitoring principles that are far more. Logically, managing a big contractor organization require high need for overview and early warnings, meaning that even though they do not work on the individual tasks on a daily basis, they still tend to depend greatly on the result from the projects. This awareness brought into view early in construction is spelt out within and outside the ability to share construction activities as these forms the core power of the project manager or the contractor in charge of the construction project which will allow for smooth and effective running of operations on and off the site. However, this particular aspect of construction is somehow termed or deemed infinitesimal as most construction professionals focus on other aspects of the

construction process while neglecting the need for delegation as early as when planning is done.

The most important and significant knowledge in construction project is Planning management and Scheduling, while the second most competencies are agreed to be quantity, human resource, communication management and cost. This result was established by highlighting of eighteen project management competencies which must be clutched far off the project administration expertise. The size, cost and other factors identified should be well considered in making decisions about what strategy of delegation to employ for a particular construction project. In a situation where there is little or no understanding of these factor practices, there is always going to occur post contractual conflicts between the parties involved in such construction.

#### **1.4 Justification for the Research**

Commission, Project Steering Committee, Process or Phases and monitoring are the success factors on which Project success depends on its interaction. A Project steering Committee that is well orchestrated and active can act as an overwhelming support for the project manager or the team leader or both, who from the comprehensive and detailed explanation of the commission is aware of the decisions that may effectively eradicate or combat problem the most within a continuously supported and well-structured monitoring process of the project performance.

This type of day-to-day monitoring process is required to control any digression from the initial concept to the completion of each objective and project stage. During the planning stage, it is a rare and brilliant choice when the project learns from success experience of other projects which entails similar objectives and use them as guide and motivation and not waste resources on solving and experimenting problems that are already defined as perfect practices on similar projects.

In order to maintain the conditions and terms of a construction contract agreed upon for execution, working towards a project that confirms within the set budget and resources of such agreement is as important as satisfying the client's needs. If a project cannot effectively manage time and budget, there is risk that such project will strive to

overcome more problems personally to save money which may eventually lead to bad decisions causing delay and further cost. This is true in the aspect of project manager because as a project manager involving a big project there is need to want to deliberately depute tasks to his or her team members, but in small project this may not be achievable to some extent. The study therefore aimed to assess the key success factors for successful delegation in construction project management and focused on the relationship between effective project delegation strategy in maximizing the possibility of project success and the management of the construction project complexity.

### **1.5 Aim and Objectives of Research**

Assessing the key success factors for successful delegation in construction project management was the aim of this research and focuses were on the relationship between effective project delegation strategy in increasing the project success verisimilitude and the construction project complexity. The objectives of the project include;

1. To evaluate the influencing factors of project success across phases of construction project across various construction industries;
2. To identify the significances of delegation as an important tool towards project success;
3. To evaluate effective project delegation strategies that could be employed in construction; and
4. To determine whether there is a relationship between effective project delegation systems and the complexity of a construction project.

### **1.6 Research Methodology**

In order to attain the research goals, research methods of several combinations were implemented, these include literature review and quantitative analysis. The literature reviewed were journals, publications, and educational researchers across construction topics that are related to the research topic. The use of online questionnaire as a quantitative measure to obtaining data for analysis also added in getting solid data

about the variables highlighted for this research project. Table 1 gave the method of compilation used for different objectives in arriving at a conclusion for this study.

Objectives	Literature review	Quantitative analysis
To assess the factors that influence project success across phases of construction project across various construction industries	✓	✓
To identify the significances of delegation as an important tool towards project success	✓	✓
To evaluate effective project delegation strategies that could be employed in construction	✓	✓
To determine whether there is a relationship between effective project delegation systems and the complexity of a construction project	✓	✓

Table 1: Relationships between Research Objectives and Research Methods

(Source: Own tabulation)

This table above shows the summary of the objectives drafted towards achieving the aim of the research. It is divided into sections that contain the highlighted objectives, literature review and quantitative analysis put to function together in bringing better knowledge of the research.

## **1.7 Thesis Structure and Contents**

### Chapter One: Introduction

The general concept and idea of the study are explained in this chapter. It encompasses various sections of the study in background of the study, research aim and objectives and other sections aimed at bringing comprehension to the study.

### Chapter Two: Literature Review

Several studies and related publications have been conducted by various researchers in regards to the research topic. These are expressed in publications, reviews, and other literary journals that speak towards the objectives highlighted in the first chapter of the thesis.

### Chapter Three: Research Methodology

The research methodology employed in the course of study are being expatiated in this chapter. Several concepts of methodologies used in the study are expressed in the study. Due to the Covid-19 pandemic, quantitative (in questionnaire) analysis was used as restrictions were placed on physical collection of data on field.

### Chapter Four: Discussion of Findings

In discussing the various data obtained from the online questionnaires sent, various results of the variables presented in the questionnaire are discussed in respect to relevance of the study. The resultant findings are discussed and inferences obtained across various sub-sections.

### Chapter Five: Conclusions and Recommendations

Conclusions are obtained from analyzed variables, and recommendations are suggested so as to commemorate the aim of which the study is conducted. This chapter concludes this study as well as further area of studies in which more research could be carried out to foster knowledge about related topics in the research.

## **CHAPTER TWO**

### **2 Literature Review**

#### **2.1 General Introduction**

In the study's literature section, several publications relating to the research study is addressed for further knowledge. As it has been discussed, publications, journals, templates and so on are obtained from several sources and are put together to obtain maximum understanding. This chapter brings secondary data gathered together and compare similarities and disparities in relevance to the several objectives identified in the study.

#### **2.2 Delegation**

The deliberate allocation of tasks and responsibilities or transfer of responsibilities from one to another is refers to as Delegation. In simple words, Delegation is the valid way of reducing workload from head or manager to all other subordinates. Studies has validated it that employees have the needed skills to succeed in the tasks delegated to them (Riisgaard, Nexøe, Le, Søndergaard, & Ledderer, 2016). Delegation as defined by Stonehouse (2015) as the act of successfully executing a task via others simply by gifting them the full autonomy over the task. It is based on the control and onus and the relationship between the individual doing the work and the person delegating the task. Through Delegation, the person carrying out the task has the responsibility to perform the work based on competency, relationship and trust. Transfer of power from the manager to the subordinates performing the duty and its decision making is permitted through delegation. The subordinates through delegation can easily influence and direct the course of action. Delegating task to subordinates is a form of effective management and it is advantageous to the organization as it affects the speed and quality of delivery. It also makes learning experience available and enhances increase responsiveness and sharing of knowledge (Lieberman & Boehe, 2011).

Project management is defined as the career which involves sequential process of controlling, planning, executing, monitoring and initiating and evaluating a task given to a team in other to achieve a set goal and a certain criterion of success. While a project

is known to be a secular activity configured to achieve a distinctive service, product or outcome with a chiseled start and stop undertaken to achieve an unparalleled goals and objectives which is majorly to add value or bring about an important change (PMI, 2004).

### **2.3 Delegation Process**

Fred (2011) explained some delegation processes, they are as follow;

- Know the task to be delegated. For complex tasks, it is a brilliant idea to highlight and write down your plans on how you are going to execute the task, which will include the expectations of the task, required parameters, the authority level and the control/check points. A copy of this well documented detail should be given to the subordinate to whom the task is delegated to thereby avoiding miscommunication.
- Appoint the best subordinate for the task. The skill, the readiness and the experience of the employee should be thoroughly examined. It is dangerous to be too swift in delegating tasks.
- Share a complete highlight of the task, plainly stating the significance of the assignment and why a particular subordinate is chosen for a particular task. With this, the employee will have maximum understanding of what is expected and acknowledge the new role.
- Explain the new work to the employee in simple and comprehensive terms clearly defining necessary parameters, listing sub-tasks, and stating the expected standard of performance. If necessary, have job aides and be sure that the employee perfectly understands the authority flow chart. Make sure that the employee notes points when they require help and who to turn to at this point and also the resources in his or her disposal. Avoid resistance by informing those affected by the emergence of the new authority of the employee.
- Reflect on the will and level at which the employee understands the new role by giving room for reactions, question and suggestions. Expect challenges that may be encountered and attack them in advance. Identify areas of treat, fear or anxiety and define means of eradicating them.

- Be attentive to any comments, complain or response from the subordinate. This will greatly help in absorbing the employee into the responsibility and it will help you in evaluating maybe the employee have full understanding of the task or not.
- Make room for assistance and provide help. There are likely tendencies that an employee who feel overlabored may be fearful about completing the jobs that are already on their desk. The onus is on you to reduce the workload and pressure to the barest minimum by assigning or sharing the employee's day-to-day activities with someone else for the period of the delegated responsibility.
- Have faith in the capacity of the employee to handle the delegated task successful and always provide encouragement.
- Supervise the task by establishing checkpoints, reviews, and deadlines. Make sure the discussion is directed towards favoring both parties.
- Don't create communication distance with the subordinate and always ensure that the deadlines and the checkpoints are observed but be careful enough to allow the employee to make personal decisions that are independent and be available to help when the employee feels there is need for help.
- Appreciate and compensate the employee on the successful execution of a particular task. Highlight their performance and be constructive in criticism.

#### **2.4 Relationship between Leadership and Delegation**

According to Kvanicz (2006) for project managers to be able to properly delegate responsibilities, they need to have genuine leadership characteristics. Appreciating others and respecting them accordingly are the major factors he stressed for a relatively successful leader. The way a leader treat and handle those around him will lay more impact in the mind of people far more than the project delivered. Consistency, fairness, persistence, requiring opinions, excellence performance and setting achievable goals with clear vision among others makes up the genuine quality of a leader who will be respected for a perfect delegation and successful leadership. (Kvanicz, 2006). It had been concluded by researches that the leadership styles employed by leaders varies from one leader to another. (Wang & Poutziouris, 2010).



How effective a leader can delegate and distribute power amongst the employee also determines the success of that particular leader (Wang & Poutziouris, 2010). A leader who appears to be power-hungry, according to Wang and Poutziouris (2010), have the tendency of solely executing most obligations alone, lead as a dictator and carry out little or no delegation. While considerate, approachable and people-oriented leader possess relatively highly level of delegation.

## **2.5 Critical Success Factors (CSFs)**

Many researchers have projected wide range of Critical Success Factors (CSF) lists and models (Frefer et al. 2018). It has been acknowledged based on the assumption, project scheduling difficulties has taken up the majority of project management effort since the 1950s, based on the idea that improved scheduling approaches will lead to improved management and consequently the successful achievement of projects. (Frefer et al. 2018). The four dimensions which CSFs in project success can take is independent (Sadeh & Shenhar, 2000). Achieving the real objectives of the design which is often regarded as the contract signed by the client is the first dimension. The advantage of the end products generated from the project to the users or the customers is the second dimension and is refers to as the merits to the end users. The third is the importance enjoyed by the developing organization owing to the execution out of the project. The fourth dimension is the meritorious impact it has on the country's technological infrastructure and the firm involve in the development phases. The coming together of the whole dimension's accounts for the total evaluation of the success of projects (Sadeh& Shenhar, 2000).

The four dimensions of success have been examined with deadlines of expected results (Steinfort & Walker, 2007). The objectives of the first dimension which is meeting cost and time goals are short term. On the other hand, customer success, i.e., meeting a technological requirement, active performance in terms of resolving a customer's issue that enhance the project perfect products is the second dimension and it is a medium team goal. The first long term goal of business success is the third dimension and it involves achieving rising market share can help projects to generate satisfaction, confidence and influence. The final dimension entails a very long-term objective of

planning for years to come by upgrading new techniques, new tools, new markets, products, services, etc. (Steinfort & Walker, 2007). Analysis of the factors shows that there are nine rudimentary bonds which are:

- Environment
- Management and technical aspects
- Experience
- Resource
- Finance
- Size or type of past projects
- Organization
- Past performances
- Safety and quality. (Alzahrani& Emsley, 2013).

The most important factors dictating the success of a project includes history of turnover, waste disposal, labor adequacy and plant resource, size of previously concluded projects and the image of the company. Table 2 gives a summary of success factors identified by various researchers. Some of these factors include cost, quality, and satisfaction and so on. This correlates with a few of the factors outlined in the literature reviewed already in this chapter.

Author	Critical Success Factors (CSFs)									
	COST	TIME	QUALITY	SATISFACTON	MANAGEMENT	SAFETY	TECHNOLOGY	ORGANIZATION	ENVIRONMENT	RESOURCES
Sadeh et.al. (2000)	X	X	X	X	X		X			
Paul Steinfort (2007)	X	X	X	X	X		X	X		
Alzahrani and Emsley (2013)	X	X	X		X	X		X	X	X
Shenhar et.al (2001)	X	X	X				X	X		
Lim and Mohamed (1999)	X	X	X				X			
Dr. Parviz (2003)	X	X	X	X	X					
Chan et al. (2004)	X	X	X		X	X	X	X	X	
Sigurour (2009)	X	X	X	X	X			X		

Note: 'X' is refer to the conclusion of CSFs from previous researchers

Table 2: Summary of Success Factors by previous Researchers (Ramlee et al. 2015)

## 2.6 Factors Affecting Project Success

A wide range of factors enhancing rate and level of project execution were listed through a comprehensive study of numerous articles. Rockart in 1982 was the first person who used the term CSFs in the area of project and he defined it as those parameters dictating the success of projects as cited by (Samart & Wutthipong, 2021). Comprehensive evaluation and in-depth study literatures over years exposed that CSFs can be categorized under five major groups. These consist of factors that are related to 1) project, 2) human, 3) project management 4) external environment and 5) project procedure.

### 2.6.1 Factors Related to Project

Samart & Wutthipong (2021) suggested that a perfect and important forecaster of construction time is project scope. Project scope can be measured using the following characteristics which are nature of project, size of project, how complex they project is, and the number of floors the project has.

### **2.6.2 Factors Related to Procurement**

Many researchers highlight how vital procurement related factors are. (Walker & Vines 2000). According to (Samart & Wutthipong, 2021), procurement scope is the model within which construction is made to exist, obtained or acquired. Hence, this factor is measured using Two different characteristics which are; Tendering method and Procurement method.

### **2.6.3 Factors Related to the Management of the Project**

The success of a project depends on proper project management. The study by (Samart & Wutthipong, 2021) proposed that the managers of projects should be capable of increasing the probability of project success by effectively making use of the available management tools. The factors to be considered in managing a project include proper communication, control plans, activeness of feedback, troubleshooting, effectiveness of coordination, project organization structure, monitoring, precision of decision-making, followed by plan and schedule, and related previous management experience (Walker & Vines,2000). The feedback capabilities, communication system, planning effort, control mechanism, safety and quality assurance program, organizational structure, subcontractor work control, and finally overall managerial actions will all have an impact on this component.

### **2.6.4 Factors Related to Project Participants**

Participants in the project, as defined by (Samart & Wutthipong, 2021) are the major personnel who include the manager of the project, the major contractors and the subcontractors involve the supplies of materials and services, consultants, and the clients themselves. It was examined the effect of the client and the client's representatives on the performance of the duration of construction and concluded that it is highly relevant. This factors that are pertaining to the client is all about attributes of the client, the kind of client and the level of experience possessed, how well the project organization understand construction works, project financing, trust of the client in the ability of the construction team, construction complexity of the owner, comprehensive technique, the way the owner want to boycott risk client's project management (Samart

& Wutthipong, 2021). The work of the designers starts from the very beginning of the project to its final execution point, this makes it the main important niche in the industry. According to Chan and Kumaraswamy (1997), the sophistication level of the project design, the error/time taken in making the documents of the design and the level of experience of the team in charge of the design are factors related to the design team.

Both the major contractor and the subcontractors begin their main work at the construction level of the project. Factors affecting the efficiency of their duties include their experience, how the site is being managed, supervision and the presence and usage of subcontractors, the rate at which information is passed, the contractor's cash flow and how capacitated the cash flow is. Another vital player in construction to be considered is the project manager because his capability will have a resultant effect on scheduling, communication and planning of the project (Belassi & Tukel 2016). Attributes related to this factor include the technical knowhow and the attributes of the project manager, their devotion to the work, competency, authority and the level of their experience. Building an active team is vital within all kinds of groups in construction projects because it demands a good team spirit. The team support by all kinds of groups to all the necessary areas (like the contractor, subcontractors, architect, construction manager, and the owner of the contract) is a vital factor that determines whether the project will be successfully executed (Hassan 1995).

### **2.6.5 Other External Factors**

The environment is considered as a variable that can dictate the success of a project by many researchers (Walker & Vines, 2000). Smart & Wutthipong (2021) considered "environment" as all external factors affecting construction process, which may include social, political, and technical systems. This factor is evaluated using qualities like economic, social, political and physical environment, also with industrial relation environment, and technology advancement stage. The figure 1 gives a general summary of these factors and subsequent actions, procedures, are related factors under each factor. These factors give a detailed breakdown on the main sub-topics to that which is comprehended in order to be used for construction researches.

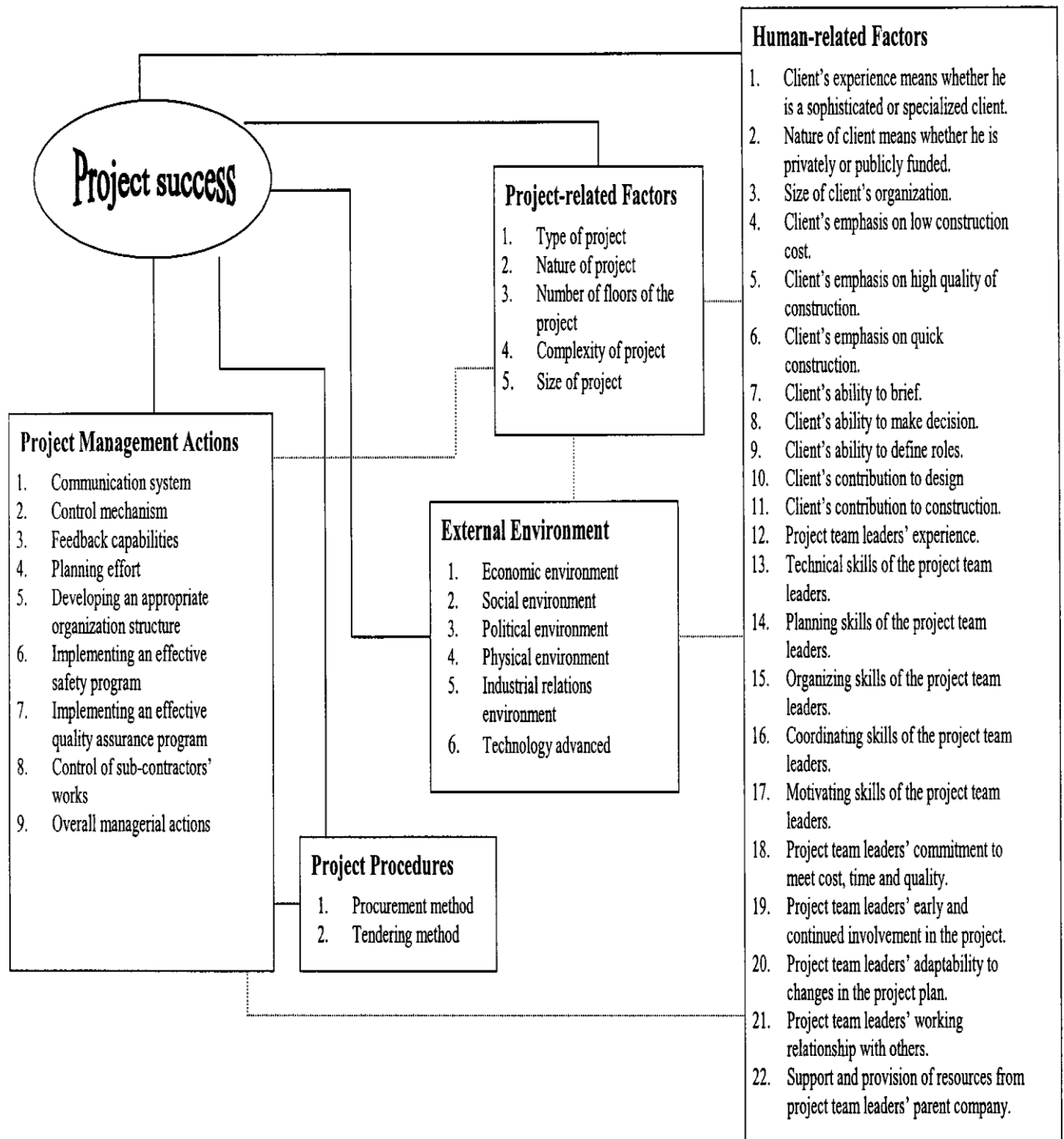


Figure 1: New conceptual framework for factors affecting project success (Albert et al. 2004)

## **2.7 CSFs for Different Project Delivery Methods**

The Project delivery methods define the functions and duties of all groups that are to take part in a project and it also dictates the sequence of construction, procurement and design. DBB (design-bid-build), CMR (construction management at risk), DB (design-build), Build Own Operate Transfer (BOOT), Build Operate Transfer (BOT), Design Build Finance Operate (DBFO), Build Lease Transfer (BLT), some of the most common delivery methods utilized in the construction sector are Integrated Project Delivery (IPD). Also, some restrictions of the government on financial policies create room for the intervention of the private sectors in providing new ways to grow and fund public infrastructure and services. Below are the highlights of CSFs for various delivery methods.

### **2.7.1 Integrated Project Delivery (IPD)**

This method of project delivery entails a team-based approach, business systems, and business structure featured together to bringing the best out of all construction participants concerned with the particular project in order to get optimized result. In this type of project delivery method, there is an increase in the value of the client, reduction in wastage (materials and labor), and efficiency is maximized throughout all the phases involved in constructing the project (Lean, 2021). IPD consists of the Owner, Lead Designer (Architect), and Lead Builder (General Contractor) which are at least the three main parties. Table 3 gives a summary of the early CSFs for different project delivery methods.

### **2.7.2 Build Own Operate Transfer (BOOT)**

BOOT is another form of project delivery method that is way similar to DFBO. The major difference between them is that there is a transfer of ownership between the parties. In carrying out operations on the project, the contractor is in charge of the project's design, construction, operations, and funding. And just like DBFO, the contractor is responsible for all risk incurred on finances from the beginning to the contract's completion while the client or owner is liable for maintenance and operation costs of the asset (Pakkala, 2002).

### **2.7.3 Build Lease Transfer (BLT)**

This is a financial arrangement in which all the systems (designs, finances) and build are handled based on a partner's land on lease or a joint venture. The private partner in charge makes recovery on payment acquired by the government or the joint venture partner. There is mostly always transfer of ownership to the government or joint ensure partner's once construction is granted the very right to operate in order to make payment within a specified period of time (Nitin, 2017)

### **2.7.4 Design and Build (D&B)**

In the understanding of D&B, it permits construction to begin prior to the completion of design drawings and specifications. The system allows for continuous progress of work without much estimation of the total value expected from the project's completion. In terms of relationship, it is a one-way street where the client would have easy access to the contractor as information passed across is limited because of not much information available at the onset of construction. Project delivery can also be attained swiftly as regards some other construction methods. Sometimes, the client could act as the contractor since minimum risk is involved. Bernan (2009) stated that clients should be very vigilant and careful when using the method as most contractors prefer this simple method to other forms of construction. Due to its simplicity, most contractors prefer to be involved. Also, emphasis was made by the author as better relationship gives rise to all round process of construction and continuous monitoring of the progress of work.

### **2.7.5 Develop and Construct (D&C)**

This technique gives the responsibility of design and other aspects of the construction to the contractor. The design is first developed and then construction is carried out with concepts that have been developed. Here, the clients have a good control of activities as well as control as liabilities are shared towards getting a better project. However, there's a possibility of higher tender price since the contractor is virtually in charge of the design with little supervision to check and control what's been designed. In cases where there are different design teams on a project, there's a possibility of conflict of interest in design which will affect the output of the work during and after completion of work.



Bernan (2009) stated that there could be substitution of the design consultants employed and contractors called into action if the client feels like the progress or nature of the work is not satisfactory enough.

### **2.7.6 Build-Operate-Transfer (BOT)**

When it comes to contracts involving BOT, equipping of design and build and the supply of the project with the needed finance is done solely performed by the private sector. Interestingly, the private sector will only submit the project to the government involve after managing operations of the asset for a particular time after the project is completely executed.

Although, project developed model involving BOT present mouthwatering benefits for both the contractors and also the government, landing a BOT contract is very vigorous and the discussion process is so sophisticated, delaying and an expensive job. In respect to this, quite numbers of researches have been done to make winning a BOT contract less rigorous. As a result, numerous studies were done in order to throw light on the path of obtaining a BOT contract. For instance, Tiong et al. (1992) carried out a deep analysis involving nine main BOT projects and conduct a questioning section for their facilitators, government personnel and entrepreneurs. The benefits of technical solutions, correct identification of the project, consortium's ability, leadership and entrepreneurship, differentiation in guarantee and differentiation of financial package were highlighted as the required CSFs needed to successfully win a BOT contract. In a conclusive research, measures the referring benefits of diver's factors and observe that the most vital factor in winning a BOT contract are the consortium's ability and differentiation of financial package.

### **2.7.7 Public-Private-Partnership (PPP)**

PPP (which is also called P3) is a contract involving correspondence between the government and a private agency which permits the private entity to execute public projects (Ke et al., 2009).The major observed importance of PPP or P3 projects includes: it protects the value of tax-payers by moving most of the damages involved to the private sector, it minimizes the cost and time of executing a project, it gives room for

upgrade in the delivering of project services and it improve government ability (Li et al., 2005). Divers' types PPP project have evolved according to the distribution of resources, rewards and risks (Li et al., 2005). Because the major attributes of P3 project is identified with a wide level of unpredictability, risk, and it concern lots of participants, it becomes very vital to create a profane route or procurement to enhance project's practices.

In a relevant research, Li et al. (2005), pick-point 18 different CSFs for P3s and analyze their relative benefits in the United Kingdom. After collating the grades of observed benefits of the divers CSFs, the most vital factors to be considered proposed includes: the financial market available, the correct distribution of risk and a buoyant private consortium. They carryout analysis of factor and arranged CSFs into four major groups which are beneficial economic conditions, ability to establish a project, active procurement process and government guarantee. Zhang (2005) also highlighted more than 40 PPPs success factors and group then into five categories which are: economic productivity, a trustworthy yielding consortium with effective technical ability, beneficial investment condition, proper distribution of risk through trustworthy contractual agreement and strong financial package. The relative benefits of minor factors were determined by carrying out a worldwide questionnaire survey. He also used a worldwide questionnaire survey to determine the relative importance of sub factors. The table 3 below highlights the summary of CSFs different project delivery methods.

Even though the fast-moving construction project market in China rendered many international firms inactive, still was there was no comprehensive method for suggesting the project results. Filling this void, Ling et al. (2008) carried out a research to suggest the success of project in China according to the management practices of the project adopted by the company. They compile data from 33 projects to identify various project management methods as critical elements in each project. Multiple linear regression was employed to create five bases to suggest the likelihood of project success. The observation shows that the reaction of the organization to a possible change order is the most vital project management practices. It was also observed that the total performance of the project was greatly influenced by hierarchical activities like

managing project scope. Helping the project agents to suggest the success of the project according to the PM practices employed is the major benefits of the model. Lu et al. (2008) employed the same system to pick-point CSFs for contractor's rivalry in China. Survey and questionnaire were used to gather the relative benefits of factors. A survey and questionnaire were used to determine the relative relevance of various elements. The best three factors were validated to be compelling strategy, an explicit competitive strategy, and closeness to government departments.

CATEGORIES	CRITICAL SUCCESS FACTORS	
Common Delivery Methods (DBB, DB and CMR)	Ling et al. (2004)	<ul style="list-style-type: none"> <li>• Adequacy of contractor's plant and equipment</li> </ul>
	Chan et al. (2001)	<ul style="list-style-type: none"> <li>• Project team commitment</li> <li>• Contractor's competencies</li> <li>• Risk and reliability assessment</li> <li>• Client's competencies</li> <li>• End-users' needs</li> <li>• Constraints imposed by end-users</li> </ul>
	Ling et al. (2004)	<ul style="list-style-type: none"> <li>• The extent to which contract period is allowed to varied during bid evaluation</li> </ul>
	Lam et al. (2008)	<ul style="list-style-type: none"> <li>• Project nature</li> <li>• Effective project management action</li> <li>• Adoption of innovative management approaches</li> </ul>
Build-Operate-Transfer (BOT)	Tiong et al. (1992), and Tiong (1996)	<ul style="list-style-type: none"> <li>• Entrepreneurship and leadership</li> <li>• Right project identification</li> <li>• Strength of the consortium</li> <li>• Technical solution advantage</li> <li>• Financial package differentiation</li> <li>• Differentiation in guarantees</li> </ul>
Public-Private-Partnership (PPP)	Li et al. (2005)	<ul style="list-style-type: none"> <li>• A strong private consortium</li> <li>• Appropriate risk allocation</li> <li>• Available financial market</li> </ul>
	Zhang (2005)	<ul style="list-style-type: none"> <li>• Favorable investment environment</li> <li>• Economic viability</li> <li>• Reliable concessionaire consortium with strong technical strength</li> <li>• Sound financial package</li> <li>• Appropriate risk allocation via contractual arrangements</li> </ul>

Table 3: Summary of the early CSFs for different project delivery methods (Behzad et al. 2016)

### **2.7.8 Management Contracting (MC)**

It is mutual practice to hire a construction manager to assist with duties including assisting with the formulation of accurate construction cost estimates that are within the "client's budget," scheduling, technological difficulties, examining the architect's designs for constructability, acquiring and negotiating bids, and trade contractor coordination. With the aim at reducing cost, the value of the project is efficient within a set budget and contract duration. The construction manager operates as the client's agent and, in theory, should have a greater understanding of the costs and availability of labor and supplies, as well as the capacity to estimate the cost and length of time it takes to finish a construction project. It has been suggested that Quantity Surveyors could function effectively in this technique or a professional with cost estimating discipline because of the nature of the duties typically allocated to the construction manager, the post of construction manager is most generally filled by a contractor, but architects can also serve in this capacity (Akpan & Chizea, 2012).

### **2.7.9 Construction Manager as Constructor (CMR)**

CMR is expressed where an experienced Prior to the end of the design phase, a construction manager is appointed to function as the project's project coordinator and general contractor. The construction manager oversees the operations on site and other activities concerned with the project. Rather than requesting the service of a construction manager at the design stage of the project, this method propounded that such services should be employed towards the end of the project. The technique employed construction managers towards the end, after activities have been carried out. This enables the construction manager to collaborate directly with the architect and avoid any potential design concerns before the construction documents are finalized. Following the conclusion of the documentation and project accessed, the construction manager solicits bids from subcontractors and general contractors for the several divisions of work in order to bring value to the project done.

### **2.7.10 Engineering Procurement and Construction (EPC)**

Under the design-build process, a single company is in charge of the structure's design as well as its construction, systems, or equipment, which is used by many construction companies. In comparing similarities, this technique is similar to design build and frequently used in place of turnkey and engineer, procure, construct (EPC) methods. The technique employs engineering procurement and relates it with construction process to achieve construction. Turnkey construction, on the other hand, not only designs and builds the space, but it also funds, maintains, operates, and re-leases the space back to the owner after it is completed. Turnkey or design-build projects have substantial consequences for the contractor's liability, regardless of whether the project is turnkey. This method is primarily employed in the execution of extremely massive and diverse projects, such as industrial facilities, refineries, power stations, and other similar facilities. It is also employed in the execution of major projects in the oil and gas industry.

### **2.7.11 Design-Build/Finance/Operate (DBFO)**

This style of project delivery entails the contractor having entire responsibility for the project's financial aspects. The contractor bears the risks in handling the project from onset to when the project will be completed within the specified contract duration. After the contract execution, the client or user is then responsible for any cost incurred in maintenance and operations of the asset (Pakkala, 2002).

## **2.8 CSFs for Partnering Process**

Coactions between various parties having different culture and organizational goal are very necessary in construction projects. Having common values and the presence of sophisticated team spirit between team members have been considered to influence project performance (Anvuur & Kumaraswamy, 2007). Absence of trust, small or no unity and weak communication can lead to differences between parties and prolong projects, increased cost, litigation, unpredictable condition and it becomes harder to resolve claims. Partnering is a good example of a generally adopted management

system that is proposed to promote relationship within organizations. Table 4 shows the summary of different CSFs for partnering process.

Studies	Critical Success Factors		
Cheng et al. (2000)	<p><i>Management skills:</i></p> <ul style="list-style-type: none"> <li>• Effective communication</li> <li>• Conflict resolution</li> </ul>	<p><i>Contextual factors:</i></p> <ul style="list-style-type: none"> <li>• Adequate resources</li> <li>• Management support</li> <li>• Mutual trust</li> </ul>	<ul style="list-style-type: none"> <li>• Long term commitment</li> <li>• Coordination</li> <li>• Creativity</li> </ul>
Black et al. (2000)	<ul style="list-style-type: none"> <li>• Trust</li> <li>• Communication</li> <li>• Commitment, a clear understanding of roles</li> <li>• Consistency and flexible attitude</li> </ul>		
Cheng and Li (2002)	<p><i>Formation:</i></p> <ul style="list-style-type: none"> <li>• Top management support</li> <li>• Mutual trust</li> <li>• Open communication</li> <li>• Effective coordination</li> <li>• Facilitator</li> <li>• Team building</li> <li>• Partnering agreement</li> </ul>	<p><i>Application:</i></p> <ul style="list-style-type: none"> <li>• Top management support</li> <li>• Mutual trust</li> <li>• Open communication</li> <li>• Effective coordination</li> <li>• Joint problem solving</li> <li>• Partnering goals' achievement</li> <li>• Adequate resources</li> <li>• Creativity</li> <li>• Workshops</li> </ul>	<p><i>Reactivation:</i></p> <ul style="list-style-type: none"> <li>• Top management support</li> <li>• Mutual trust</li> <li>• Open communication</li> <li>• Effective coordination</li> <li>• Long-term commitment</li> <li>• Continuous improvement</li> <li>• Learning climate</li> <li>• Partnering experience</li> <li>• Joint problem solving</li> <li>• Adequate resources</li> <li>• Workshops</li> </ul>
Chan et al. (2004)	<ul style="list-style-type: none"> <li>• Establishment and communication of a conflict resolution strategy</li> <li>• A willingness to share resources among project participants</li> <li>• A clear definition of responsibilities</li> <li>• A commitment to a win-win attitude</li> <li>• Regular monitoring of partnering process</li> </ul>		

Table 4: Summary of CSFs for partnering process (Behzad et al. 2016)

Partnering can be defined as a managerial strategy targeted to improve the gaps between organizations and create a situation where team members can freely relate and carry out their duties (Crowley & Karim, 1995). Of a truth, partnering is a system

constructed in such a way that it upgrades the original and antagonistic strategy into a relatively improved communication network of construction teams (Cheng & Li, 2002). Some of the wide importance it offers to both a project and members of the project team includes improved chances for modernization; enhance easy flow of communication, litigation reduction, reduced risk of cost overruns and active strategy for resolving disputes (Leonard, 2000; Black et al., 2000). Partnering achieve all these by emphasizing and showing everyone involved in the project the need for an all-win strategy and having a system of effective teamwork.

Black et al. (2000) examined various organizations both with and without previous experience in partnering to study the relevance of CSFs in achieving success in partnering. Point of views from clients, contractors and some consultants in the United Kingdom were collected concerning the factors affecting success and importance of partnering. It was observed that to establish partnering, some criteria must be met which includes: flexibility, consistency, complete knowledge of duty, trust, effective communication and commitment. It was also noted that consultants do not show the level of support shown by both clients and contractors towards the process of partnering.

Another consideration made by Cheng and Li (2002) is to describe CSFs for divers' phase of formation, application, reactivation and partnering. The process of analytical hierarchy was used to emphasize these factors. All the partnering processes were affected by some of the CSFs according to the result obtained, although Some CSFs have an impact on specific stages of the process. The familiar CSFs for all the partnering process include the support of the management, trust from all ends, and result oriented coordination, while the CSFs at point of forming partnering includes; facilitator, console of partnering and team building. Also, the CSFs applying partnering are; sufficient resources, meeting the objectives of partnering, and providing solution to problems collectively. Lastly, long-term commitment, experience of partnering, progressive improvement, and learning climate are vital in the stage of reactivation of partnering.

Difference in ethics and culture can influence partnering process (Cheng & Li, 2002). Researchers try to state the CSFs of partnering based on the traditional attributes of a particular country because partnering is becoming a very familiar practice worldwide.

Chan et al. (2004) points out important success factors for partnering projects through gathering of the point of view of various personnel like clients, consultants and contractors to able to fully know the factors of successful partnering in construction organization in Hong Kong. With the aid of multiple regression and factor analysis the correlation of partnering success perception and some identified factors of success was examined. It was therefore concluded that a comprehensive understands of role, willingness to share the resources available, Creation and communication of a system of resolving dispute, constant checking of the partnering process and devotion to an all-win behavior are the important characteristic needed for successful partnering.

## **2.9 Delegation for Project Success**

Delegation in any industry plays roles that are peculiar to the identified industry. The delegation of activities in construction aids in many ways as it brings the best out of construction processes. The significances of delegation in construction encompass various interactions among all parties (client, project manager, contractor, employees) that are somewhat involved in the design and execution of a project involving constructions. The roles played are listed below as narrated by (CFI, 2021).

### **2.9.1 Efficiency**

By delegating functions to others in the construction industry, the project manager is transferring responsibility to the rest of the construction team whose skills fit perfectly into the mode of operation identified to be executed (CFI, 2021). The efficiency of the construction project is enhanced; better projects are executed within the set duration of contract.

### **2.9.2 Development**

In case where the delegation of work is to a professional who is not well versed in doing the task, delegation plays a vital role in coaching and teaching others. The delegated



functions will in turn spun the construction team to want to get better at whatever function and from such, there is a transfer of knowledge and development is bound to occur under such situation (CFI, 2021).

### **2.9.3 Time Management**

Delegating activities in construction gives the delegator the time and ability to focus on other higher-level tasks related to the project or other projects handled by such personnel (CFI, 2021). There is allocation of time and thus improves the schedule of work to be carried out seldom or daily within the set contract duration.

### **2.9.4 Skill Acquisition**

New skills are learnt and developed through delegation as members are compelled to learn new orientations in order to carry out a specified instruction. The construction team works well with the newly acquired skills to implement functions in executing different stages of the construction project (CFI, 2021).

### **2.9.5 Productivity**

Productivity is enhanced when delegation is put into place. Productivity cuts across every facet of planning, execution and management as it brings the best out of the members involved (CFI, 2021). Delegation works well in bridging the gap between production and efficiency related to the construction.

## **2.10 Summary**

In summary, identified objectives of the study are discussed and put together to affirm correlation of various publications discussed prior to carrying out concepts related to the research topic. The chapter serves as knowledge background of various researches carried out directly or related ones concerned with key successful delegation towards construction project management.

## **CHAPTER THREE**

### **3 Research Methodology**

#### **3.1 Introduction**

This particular stage of this research gave a brief overview concerning the data analytical method opted for in this research. The use of questionnaires administration through electronic means was employed to give a detailed and further description of variables concerned in actualization of key success factors towards successful construction project management in the Lagos construction industry.

#### **3.2 Research Strategy and Methodology**

Research strategy and methodology gives a detailed concept and practices put together in making the study a successful one. The research is centered towards originality, without being bias through reliable variables analyzed in order to arrive at inferences. According to Blumberg et al. (2005), the study is carried out to obtain knowledge through variables identified as facts. This will form the basis of the quantitative analysis opted for in this research.

#### **3.3 Research design**

A research design is the satisfactory preparation of factors for data analysis and data collection in a way that is projected towards bringing relevance into the objective of the research with financing in procedure (Kothari, 2009). A descriptive and diagnostic research studies would be adopted. Kothari (2004) defined descriptive and diagnostic research studies as the research which explains the attributes of a personnel and determining the frequency at which something is in association with something else. Primary data was collected via electronic means of questionnaires for the aim of this research. The probability of every sample to be added to the sample would be determined through the probability samples (Kothari, 2004).

### 3.4 Research population

A population is the totality of all elements under observation. According to Kothari (2004), a population constitutes all items in any field of enquiry. Thus, population in research is said to be a collection of elements being studied about which conclusions are to be drawn. The targeted population for this study comprised of construction professionals currently involved in building construction projects in Lagos state, Nigeria.

### 3.5 Sample frame

Sample frame can be defined as a complete arrangement of all elements inside where the sample is selected. A sample frame can also be explained as the real compilation of element inside where sampling takes place Kothari (2004). The major deviation between a sampling frame and the population is simply that the population is pertaining to a whole class while sampling frame is exerted. Thus, the sampling frame included construction professionals currently taking part in Lagos construction work of a building. Not less than 259 questionnaires were administered to respondents in order to obtain adequate data.

Table 5 showing the numbers of construction professionals in the Lagos construction industry (NIQS, 2020)

<b>Professionals</b>	<b>Sample frame</b>	<b>Sample Size</b>
Quantity surveyors	1080	70
Architects	1700	68
Builders	700	60
Engineers	1850	61
<b>Total</b>	<b>5330</b>	<b>259</b>

Table 5: Numbers of construction professionals in the Lagos construction industry

Source: Nigerian Institute of Quantity Surveyors (NIQS, 2020) office, Lagos State Chapter., NIOB, NIA, Lagos state chapter., Lagos State Tenders Board website ([www.stb.lagosstate.gov.ng](http://www.stb.lagosstate.gov.ng))

### 3.6 Sampling size

The sample frame for this study was the registered practicing construction professionals in Lagos State. The sample size for this study was calculated by using the formula derived by Yamane in 1967. Out of all the construction professionals who are engaged in various constructions in Lagos state Nigeria, a sample size of two hundred and fifty-nine (259) questionnaires was fixed for the study (as calculated above). This size was considered as a representative of the population study.

The sample size was calculated with the formula;

$$n = \frac{N}{1+N(e)^2}$$

Where n= sample size N= total population

e = level of precision 15%

### 3.7 Sampling technique

To collect desired data, method of convenient sampling was adopted. This implied a non-random selection of the different members of the population in the study area.

### 3.8 Research instruments

The instrument employed in gathering of information to realize the goals of this research was a questionnaire which was designed to measure several variables. Section A aimed at finding out respondent characteristics such as, designation of respondent, qualification and so on. Section B provided data on assessing factors that influences project success. Section C identified the significances of delegation to project success. Section D evaluate defective project delegation strategies and Section E was used to determine the relationship between effective project delegation strategy and the complexity of a construction project. The questionnaires were designed to gather valid and reliable information as it was administered to the construction professional workers in Lagos State, Nigeria of various firms.

### 3.9 Methods of presentation and analysis

Tables were used in the study to display both collected and analyzed data for the objectives. Mean score, mean item score and percentile were used to determine the proportion of respondents choosing the various responses. Perfect statistical techniques such as Statistical Package for Social Science; mean, median, mode was employed to carry out the required data analysis. The choice of analyzing tool was mounted on each objective of the study.

#### 3.9.1 Percentile

To collect information pertaining to the profiles of the firm and the respondents which reveal the age and size of the firm as well as other indicators or determinants, percentile was used in section A to analyze the variables using percentage scores to categorize the responses into different categories according to sections and sub-sections.

#### 3.9.2 Mean item score

This is the average of the values in a set of data. The mean ranked response (x) for a group of respondents was obtained thus:

Where M = mean item score

X = range 1 – 5 with 5 being the highest and 1 being the lowest

F = Frequency of respondent in each factor

$$\text{Mean Score} = \frac{\sum(FX)}{N} \dots\dots\dots 3$$

Where x is the rating used per column

F is the sample size for each rating

N is the total sample size

Since a Likert of 5point scale is employed for the collection of data, the formula for MIS is written as

$$\text{MIS} = \frac{5F_5 + 4F_4 + 3F_3 + 2F_2 + 1F_1}{F_5 + F_4 + F_3 + F_2 + F_1} \dots\dots\dots 4$$

## **CHAPTER FOUR**

### **4 Data Presentation and Analysis**

#### **4.1 Introduction**

The essence of this chapter is to analyze and to discuss the data collected via questionnaire. The data collected were presented in tabular format while Pearson correlation and regression were applied appropriately for the analysis where necessary. The questionnaire for the study was divided into six (6) sections. Section A comprised of issues that helped the researcher to ascertain the reliability of the information provided as it gives the background information of the individual respondent. The sections that addressed the specific objectives of the research were section B, C, D, E and F. These sections were designed so as to obtain in-depth information about the effective project delegation strategies that could be employed in construction, the influencing factors of project success across phases of construction project across various construction industries; critical success factors (CSFs), factors affecting project success; determining whether there is a relationship between effective project delegation systems and the complexity of a construction project as well as the significances of delegation as an important tool towards project success.

#### **4.2 Characteristics of Respondents**

A total of two hundred and fifty-nine (259) questionnaires were sent out to construction professionals within the study area which is Lagos state, and a total number of two hundred and thirty-two (232) copies were retrieved from the respondents. The questionnaire was completed by professionals in the construction industry and they include Quantity Surveyors, Builders, Architects and Engineers as they were in good position to give a more reliable information about key success factors for successful delegation in construction project management. The response rate for completed questionnaire is shown in table 6.

Table 6: Distribution of Respondent

Professionals	Sample Size	Response
Quantity surveyors	70	64
Architects	68	57
Builders	60	54
Engineers	61	57
<b>Total</b>	<b>259</b>	<b>232</b>

Table 7: Educational Level of Respondents

Educational Level	Classification	Frequency (no)	Percent (%)
	Diploma/Higher Diploma	37	15.9
	Bachelor	103	44.4
	Master	66	28.4
	Doctoral	26	11.2
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result in table 7 above shows the educational level of the respondents, 44.4% of the respondents are bachelor degree holder, 28.4% of the respondents are master degree holders, and 15.9% of the respondents are Diploma/Higher Diploma while 11.2% of the respondents possess Doctoral in their field of profession.

Table 8: Working Experience of Respondents

Working Experience	Classification	Frequency (no)	Percent (%)
	< 1 year	23	9.9
	1-5 years	76	32.8
	6-10 years	43	18.5
	11-15 years	43	18.5
	16-20 years	25	10.8
	> 20 years	22	9.5
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result table 8 above also shows the working experience of respondents, 32.8% of the respondents have between 1-5 years working experience, 18.5% of the respondent have between 11-15 years working experience, 18.5% of the respondents have

between 6-10 years working experience, 10.8% of the respondents have between 16-20 years working experience, 9.9% of the respondents have less than a year working experience while 9.5% of the respondents have above 20 years working experience.

Table 9: Professional Background of Respondents

<b>Professional Background</b>	<b>Classification</b>	<b>Frequency (no)</b>	<b>Percent (%)</b>
	Quantity surveying	64	27.6
	Architecture	57	24.6
	Building	54	23.3
	Engineering	57	24.6
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result above also shows the professional background of respondents, 27.6% of the respondents are quantity surveyors, 24.6% of the respondents are architecture, and 24.6% of the respondents are engineers while 23.3% of the respondents are builders.

Table 10: Company Type of Respondents

<b>Company Type</b>	<b>Classification</b>	<b>Frequency (no)</b>	<b>Percent (%)</b>
	Consulting firm	42	18.1
	Contracting firm	58	25.0
	Developer	41	17.7
	Government establishment	62	26.7
	Client/client representative	29	12.5
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result above shows the type of respondents' companies, 26.7% of the respondent works in a government establishment, and 25% of the respondents work in a contracting firm, 18.1% of the respondents work in a consulting firm and 17.7% of the respondents work as a developer while 12.5% of the respondents are client/client representative.



Table 11: Project Type Handled by Respondents

Project Type	Classification	Frequency (no)	Percent (%)
	Building works	57	24.6
	Civil works	51	22.0
	Heavy engineering works	60	25.9
	Surveying/Geo-informatics	36	15.5
	Client/client representative	28	12.1
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result above shows the project type handled by respondents, 25.9% of the respondents handle heavy engineering works, 24.6% of the respondents handle building works, 22.0% of the respondents handle civil works and 15.5% of the respondents handle surveying/geo-informatics while 12.1% of the respondents are client/client representative.

### 4.3 Effective Project Delegation Strategies

Table 12: Participation in Delegation Process

Have you participated in any delegation process in your establishment before?	Classification	Frequency (no)	Percent (%)
	Yes	134	57.8
	No	59	25.4
	Maybe	39	16.8
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result in table 12 above shows the effective project delegation strategies that could be employed in construction, and the result after analyzing the data shows that 57.8% of the respondents have participated in delegation process before, 25.4% of the respondents have not participated in delegation process before while 16.8% are undecided as their response was maybe.

Table 13: Number of Delegation Processes Participated

How many delegation processes have you participated in?	Classification	Frequency (no)	Percent (%)
	1-3	52	22.4
	4-6	54	23.3
	7-9	55	23.7
	10 and above	71	30.6
	<b>Total</b>	<b>232</b>	<b>100.0</b>

The result in tables 13 above shows the number of delegations processes each respondent has participated in, out of the two hundred and thirty-two (232) respondents, 30.6% of the respondents have participated in above 10 delegation processes, 23.7% of the respondents have participated in about 7-9 delegation processes, 23.3% of the respondents have participated in about 4-6 delegation processes, 22.4% of the respondents have participated in about 1-3 delegation processes.

#### 4.4 Influencing Factors of Project Success across Phases of Construction Project in Various Construction Industries; Critical Success Factors (CSFs)

Table 14: Factors Influencing Project Success

Factors Influencing Project Success	Mean	Standard	Rank
		Deviation	
Environment	3.98	1.208	1
Cost	3.81	1.169	2
Time	3.61	0.928	3
Technology	3.54	1.127	4
Safety	3.45	1.265	5
Satisfaction	3.20	1.232	6
Management	3.10	1.054	7
Resources	3.06	1.326	8
Quality	2.96	1.033	9
Organization	2.52	1.151	10

According to the findings after analysing respondent's opinion, table 14 above shows the ranking of the factors influencing project success across phases of construction project in various construction industries according to their level of significance:

environment factor was deduced to be the most ranked factor influencing project success and it has a mean item score of 3.98, cost was ranked as the second factor influencing project success with a mean item score of 3.81, time was ranked as the third factor influencing project success with a mean item score of 3.61, technology was ranked as the fourth factor influencing project success with a mean item score of 3.54, safety was ranked as the fifth factor influencing project success across phases of construction project across various construction industries with a mean item score of 3.45, satisfaction was ranked as the sixth factor influencing project success with a mean item score of 3.20, management was ranked as the seventh factor influencing project success across phases of construction project across various construction industries with a mean item score of 3.10, resources was ranked as the eighth factor influencing project success with a mean item score of 3.06, quality was ranked as the ninth factor influencing project success across phases of construction project across various construction industries with a mean item score of 2.96, organisation was ranked as the least factor influencing project success with a mean item score of 2.52.

#### 4.5 Factors Affecting Project Success

Table 15: Project Factors Affecting Project Success

<b>Project Factors Affecting Project Success</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Rank</b>
Complexity Of Project	3.80	1.095	1
Number Of Floors of The Project	3.70	1.020	2
Size Of Project	3.27	1.031	3
Nature Of Project	3.08	0.841	4
Type Of Project	2.81	0.966	5

According to the findings after analyzing respondent's opinion, table 15 above shows the ranking of the project factor affecting project success according to their level of significance: complexity of project was deduced to be the most ranked project factor affecting project success and it has a mean item score of 3.80, number of floors of the project was ranked as the second project factor affecting project success with a mean item score of 3.70, size of project was ranked as the third project factor affecting project success with a mean item score of 3.27, nature of project was ranked as the fourth

project factor affecting project success with a mean item score of 3.08, type of project was the least ranked project factor affecting project success with a mean item score of 2.81.

Table 16: Project Management Actions Affecting Project Success

<b>Project Management Actions Affecting Project Success</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Rank</b>
Control Mechanism	3.70	0.918	1
Implementing An Effective Safety Program	3.65	1.111	2
Developing An Appropriate Organization Structure	3.51	0.958	3
Overall Managerial Actions	3.44	0.965	4
Implementing An Effective Quality Assurance Program	3.34	1.053	5
Communication System	3.28	0.919	6
Control Of Sub-Contractors Works	3.27	0.935	7
Planning Effort	3.27	0.810	7
Feedback Capability	3.24	0.913	9

According to the findings after analyzing respondent's opinion, table 16 above shows the ranking of the project management actions affecting project success according to their level of significance: control mechanism was deduced to be the most ranked project management actions affecting project success and it has a mean item score of 3.70, implementing an effective safety program was ranked as the second project management actions affecting project success with a mean item score of 3.65, developing an appropriate organization structure was ranked as the third project management actions affecting project success with a mean item score of 3.51, overall managerial actions was ranked as the fourth project management actions affecting project success with a mean item score of 3.44, implementing an effective quality assurance program was ranked as the fifth project management actions affecting project success with a mean item score of 3.34, communication system was ranked as the sixth project management actions affecting project success with a mean item score of 3.28, control of sub-contractors works was ranked as the seventh project management actions affecting project success with a mean item score of 3.27, planning effort was ranked as the seventh project management actions affecting project success

with a mean item score of 3.27, feedback capability was also the least ranked project management actions affecting project success with a mean item score of 3.24.

Table 17: External Environment Factors Affecting Project Success

<b>External Environment Factors Affecting Project Success</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Rank</b>
Economic environment	3.31	0.939	1
Technology advanced	3.27	1.096	2
Political environment	3.15	1.006	3
Social environment	3.13	1.041	4
Physical environment	3.11	0.940	5
Industrial relation environment	2.96	0.932	6

According to the findings after analyzing respondent's opinion, Table 17 above shows the ranking of the external environment factors affecting project success according to their level of significance: economic environment was deduced to be the most ranked external environment factors affecting project success and it has a mean item score of 3.31, technology advanced was ranked as the second external environment factors affecting project success with a mean item score of 3.27, political environment was ranked as the third external environment factors affecting project success with a mean item score of 3.15, social environment was ranked as the fourth external environment factors affecting project success with a mean item score of 3.13, physical environment was ranked as the fifth external environment factors affecting project success with a mean 3.11, industrial relation environment was ranked as the least external environment factors affecting project success with a mean item score of 2.96.

Table 18: Correlations

		Correlations						
		Economic environment	Social environment	Political environment	Physical environment	Industrial relation environment	Technology advanced	
<b>Economic environment</b>	Pearson Correlation	1						
	Sig. (2-tailed)							
<b>Social environment</b>	N	232						
	Pearson Correlation	0.012	1					
<b>Political environment</b>	Sig. (2-tailed)	0.857						
	N	232	232					
<b>Physical environment</b>	Pearson Correlation	-.426**	0.076	1				
	Sig. (2-tailed)	0	0.246					
<b>Industrial relation environment</b>	N	232	232	232				
	Pearson Correlation	-0.058	-.275**	-0.045	1			
<b>Technology advanced</b>	Sig. (2-tailed)	0.382	0	0.498				
	N	232	232	232	232			
<b>Economic environment</b>	Pearson Correlation	.222**	-0.066	-.155*	0.015	1		
	Sig. (2-tailed)	0.001	0.315	0.018	0.824			
<b>Social environment</b>	N	232	232	232	232	232		
	Pearson Correlation	.226**	0	-0.08	0.039	.451**	1	
<b>Political environment</b>	Sig. (2-tailed)	0.001	0.999	0.225	0.553	0		
	N	232	232	232	232	232	232	

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

Table 18 shows that each variable is perfectly correlated with itself and so  $r = 1$  along the diagonal of the table. Economic environment is related to social environment with a Pearson correlation coefficient of  $r = 0.426$  and the significance value is less than 0.01 (as indicated by the double asterisk after the coefficient). The output also shows that Industrial relation environment is related to Political environment, with a coefficient of  $r = 0.275$ ,

which is also significant at  $p < 0.01$ . Political environment is related to Physical environment with a Pearson correlation coefficient of  $r = 0.155$  and the significance value is less than 0.01, Physical environment is related to Industrial relation environment, with a coefficient of  $r = 0.824$ , which is also significant at  $p < 0.01$ . Industrial relation environment is related to Technology advanced, with a coefficient of  $r = 0.451$ , which is also significant at  $p < 0.01$ .

Table 19: Project Procedure Factors Affecting Project Success

Project Procedure Factors Affecting Project Success	Mean	Standard Deviation	Rank
Procurement method	3.32	1.152	1
Tendering method	3.08	0.979	2

According to the findings after analyzing respondent's opinion, table 19 above shows the ranking of the project procedure factors affecting project success according to their level of significance: procurement method was deduced to be the most ranked project procedure factor affecting project success and it has a mean item score of 3.32, tendering method was ranked as the second project procedure factor affecting project success with a mean item score of 3.08.

Table 20: Procurement Method

Procurement		
Method	Frequency	Percent
Strongly Disagree	20	8.6
Disagree	26	11.2
Strongly Agree	87	37.5
Agree	57	24.6
Undecided	42	18.1
<b>Total</b>	<b>232</b>	<b>100.0</b>

After analyzing the respondent's opinion on project procedure factors that is affecting project success, it was discovered that 87 (37.5%) of the respondents strongly agree that procurement method is a major project procedure factor that is affecting project

success in construction industry, 57 (24.6%) of the respondents agree that procurement method is a major project procedure factor that is affecting project success in construction industry, 42 (18.1%) of the respondents are undecided about the fact that procurement method is a major project procedure factor that is affecting project success in construction industry, 26 (11.2%) of the respondents disagree that procurement method is a major project procedure factor that is affecting project success in construction industry, 20 (8.6%) of the respondents strongly disagree that procurement method is a major project procedure factor that is affecting project success in construction industry.

Table 21: Tendering Method

<b>Tendering Method</b>	<b>Frequency</b>	<b>Percent</b>
Strongly Disagree	10	4.3
Disagree	49	21.1
Strongly Agree	108	46.6
Agree	42	18.1
Undecided	23	9.9
<b>Total</b>	<b>232</b>	<b>100.0</b>

After analyzing the respondent's opinion on project procedure factors that is affecting project success, it was discovered that 108 (46.6%) of the respondents strongly agree that tendering method is a major project procedure factor that is affecting project success in construction industry, 49 (21.1%) of the respondents disagree that tendering method is a major project procedure factor that is affecting project success in construction industry, 42 (18.1%) of the respondents agree that tendering method is a major project procedure factor that is affecting project success in construction industry, 23 (9.9%) of the respondents are undecided about the fact that tendering method is a major project procedure factor that is affecting project success in construction industry, 10 (4.3%) of the respondent strongly disagree that tendering method is a major project procedure factor that is affecting project success in construction industry.



Table 22: Human Factor Affecting Project Success

Human Factor Affecting Project Success	Mean	Standard	
		Deviation	Rank
Size of client's organization	3.63	1.170	1
Client's ability to brief	3.52	0.993	2
client's emphasis on quick construction	3.39	0.688	3
Nature of client	3.38	0.869	4
Project team leaders experience	3.35	1.075	5
Client's experience	3.28	0.893	6
Technical skills of the project team leaders	3.17	1.264	7
Client's contribution to design	3.16	0.874	8
Motivating skills of the project team leaders	3.12	1.330	9
Client's ability to define roles	3.09	0.933	10
planning skills of the project team leaders	3.03	0.916	11
organizing skills of the project team leaders	2.99	1.049	12
Client's ability to make decision	2.96	1.171	13
Client's emphasis on high quality of construction	2.91	0.784	14
Client's emphasis on low construction cost	2.90	1.071	15
Coordinating skills of the project team leaders	2.90	1.268	15
Project team leader's commitment to meet cost. time and quality	2.78	1.125	17

According to the findings after analyzing respondent's opinion, Table 22 above shows the ranking of the human factor affecting project success according to their level of significance: size of client's organization was deduced to be the most ranked human factor affecting project success and it has a mean item score of 3.63, client's ability to brief was ranked as the second human factor affecting project success with a mean item score of 3.52, client's emphasis on quick construction was ranked as the third

human factor affecting project success with a mean item score of 3.39, nature of client was ranked as the fourth human factor affecting project success with a mean item score of 3.38, project team leaders experience was ranked as the fifth human factor affecting project success with a mean item score of 3.35, client's experience was ranked as the sixth human factor affecting project success with a mean item score of 3.28, technical skills of the project team leaders was ranked as the seventh human factor affecting project success with a mean item score of 3.17, client's contribution to design was ranked as the eighth human factor affecting project success with a mean item score of 3.16, motivating skills of the project team leaders was ranked as the ninth human factor affecting project success with a mean item score of 3.12. Other human factor affecting project success is as follow; client's ability to define roles with a mean item score of 3.09, planning skills of the project team leaders with a mean item score of 3.03, organizing skills of the project team leaders with a mean item score of 2.99, client's ability to make decision with a mean item score of 2.96, client's emphasis on high quality of construction with a mean item score of 2.91, client's emphasis on low construction cost with a mean item score of 2.90, coordinating skills of the project team leaders with a mean item score of 2.90, project team leader's commitment to meet cost, time and quality with a mean item score of 2.78.

#### 4.6 Determining whether there is a Relationship between Effective Project Delegation Systems and the Complexity of a Construction Project for Different Project Delivery Methods

Table 23: Critical Success Factors (CSFs) for Different Project Delivery Methods

CSFs For Different Project Delivery Methods	Mean	Standard	
		Deviation	Rank
Management Contracting (MC)	3.58	0.908	1
Design-Build/Finance/Operate (DBFO)	3.57	0.995	2
Construction Manager as Constructor (CMR)	3.49	0.800	3
Build Own Operate Transfer (BOOT)	3.45	0.961	4
Public-Private-Partnership (PPP)	3.37	0.958	5
Build-Operate-Transfer (BOT)	3.32	0.951	6
Engineering Procurement and Construction (EPC)	3.21	1.136	7
Integrated Project Delivery (IPD)	3.21	0.998	7
Design and Build (D&B)	3.20	0.885	9
Develop and Construct (D&C)	3.16	0.885	10
Build Lease Transfer (BLT)	3.14	0.874	11

According to the findings after analyzing respondent's opinion, Table 23 above shows the ranking of the critical success factors for different project delivery methods according to their level of significance: Management Contracting (MC) was deduced to be the most ranked factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.58, Design-Build/Finance/Operate (DBFO) was ranked as the second factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.57, Construction Manager as Constructor (CMR) was ranked as the third factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.49, Build Own Operate Transfer (BOOT) was ranked as the fourth factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.45, Public-Private-Partnership (PPP) was ranked as the fifth factor regarding

the critical success factors for different project delivery methods and it has a mean item score of 3.37. Build-Operate-Transfer (BOT) was ranked as the sixth factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.32, Engineering Procurement and Construction (EPC) was ranked as the seventh factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.21, Integrated Project Delivery (IPD) was ranked as the seventh factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.21, Design and Build (D&B) was ranked as the ninth factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.20, Develop and Construct (D&C) was ranked as the tenth factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.16, Build Lease Transfer (BLT) the least ranked factor regarding the critical success factors for different project delivery methods and it has a mean item score of 3.14.

Table 24: Correlation

			Integrated Project Delivery (IPD)	Build Own Operate Transfer (BOOT)	Build Lease Transfer (BLT)	Design and Build (D&B)	Develop and Construct (D&C)	Build- Operate- Transfer (BOT)	Public- Private- Partnersh ip (PPP)	Managem ent Contracti ng (MC)	Constructio n Manager as Constructo r (CMR)	Engineerin g Procureme nt and Constructi on (EPC)
<b>Integrated Project Delivery (IPD)</b>	Pearson Correlation		1									
	Sig. (2-tailed)											
<b>Build Own Operate Transfer (BOOT)</b>	Pearson Correlation	.082		1								
	Sig. (2-tailed)	.211										
<b>Build Lease Transfer (BLT)</b>	Pearson Correlation	-.262**	-.196**		1							
	Sig. (2-tailed)	.000	.003									
<b>Design and Build (D&amp;B)</b>	Pearson Correlation	-.027	-.070	-.160*		1						
	Sig. (2-tailed)	.682	.286	.015								
<b>Develop and Construct (D&amp;C)</b>	Pearson Correlation	.036	.327**	.099	-.239**		1					
	Sig. (2-tailed)	.586	.000	.132	.000							
<b>Build-Operate-Transfer (BOT)</b>	Pearson Correlation	.089	.180**	.023	-.195**	.021		1				
	Sig. (2-tailed)	.177	.006	.732	.003	.753						
<b>Public-Private-Partnership (PPP)</b>	Pearson Correlation	-.084	-.139*	.269**	.006	-.202**	-.126		1			
	Sig. (2-tailed)	.201	.035	.000	.929	.002	.055					
<b>Management Contracting (MC)</b>	Pearson Correlation	-.023	-.028	.021	-.192**	-.110	-.162*	.039		1		
	Sig. (2-tailed)	.732	.671	.745	.003	.096	.013	.551				
<b>Construction Manager as Constructor (CMR)</b>	Pearson Correlation	-.047	.047	-.162*	.241**	.005	-.170**	-.321**	-.136*		1	
	Sig. (2-tailed)	.481	.473	.013	.000	.940	.010	.000	.038			
<b>Engineering Procurement and Construction (EPC)</b>	Pearson Correlation	.157*	.112	-.069	-.084	-.020	.174**	-.038	.119	.054		1
	Sig. (2-tailed)	.017	.088	.295	.202	.761	.008	.563	.071	.410		

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed). c. Listwise N=232

Table 24 shows that each variable is perfectly correlated with itself and so  $r = 1$  along the diagonal of the table. Integrated Project Delivery (IPD) is related to Build Own Operate Transfer (BOOT) with a Pearson correlation coefficient of  $r = 0.082$  and the significance value is less than 0.01 (as indicated by the double asterisk after the coefficient). The output also shows that Build Own Operate Transfer (BOOT) is related to Build Lease Transfer (BLT), with a coefficient of  $r = 0.196$ , which is also significant at  $p < 0.01$ .

Build Lease Transfer (BLT) is related to Design and Build (D&B) with a Pearson correlation coefficient of  $r = 0.160$  and the significance value is less than 0.01, Design and Build (D&B) is related to Develop and Construct (D&C), with a coefficient of  $r = 0.239$ , which is also significant at  $p < 0.01$ .

#### 4.7 The Significances of Delegation as an Important Tool towards Project Success

Table 25: Significances of Delegation

Significances Of Delegation	Mean	Standard	
		Deviation	Rank
Skill acquisition	3.47	1.136	1
Productivity	3.37	1.101	2
Efficiency	3.26	1.137	3
Time Management	3.19	0.963	4
Development	2.68	0.889	5

According to the findings after analyzing respondent's opinion, Table 25 above shows the ranking of the significance of delegation as an important tool towards project success according to their level of significance: skill acquisition was deduced to be the most ranked factor regarding the significance of delegation as an important tool towards project success and it has a mean item score of 3.47, productivity was ranked as the second factor as regard the significance of delegation with a mean item score of 3.37, efficiency was ranked as the third factor as regard the significance of delegation as an important tool towards project success with a mean item score of 3.26, time

management was ranked as the fourth factor as regard the significance of delegation as an important tool towards project success with a mean item score of 3.19, development was ranked as the least factor as regard the significance of delegation as an important tool towards project success with a mean item score of 2.68.

Table 26: Correlation

		Correlations				
		Efficiency	Development	Time Management	Skill Acquisition	Productivity
Efficiency	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	232				
Development	Pearson Correlation	-.158*	1			
	Sig. (2-tailed)	0.016				
	N	232	232			
Time Management	Pearson Correlation	-.188**	.229**	1		
	Sig. (2-tailed)	0.004	0			
	N	232	232	232		
Skill Acquisition	Pearson Correlation	0.066	.129*	.173**	1	
	Sig. (2-tailed)	0.32	0.05	0.008		
	N	232	232	232	232	
Productivity	Pearson Correlation	0.017	.284**	0.063	.397**	1
	Sig. (2-tailed)	0.793	0	0.337	0	
	N	232	232	232	232	232

\*. Correlation is significant at the 0.05 level (2-tailed).

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 26 shows that each variable is perfectly correlated with itself and so  $r = 1$  along the diagonal of the table. Efficiency is related to Development with a Pearson correlation coefficient of  $r = 0.158$  and the significance value is less than 0.01 (as indicated by the asterisk after the coefficient). The output also shows that Development is positively related to Time Management, with a coefficient of  $r = 0.229$ , which is also significant at  $p < 0.01$  (as indicated by the double asterisk after the coefficient). Skill Acquisition is

related to Time Management with a Pearson correlation coefficient of  $r = 0.173$  and the significance value is less than 0.01, Productivity is positively related to Skill Acquisition, with a coefficient of  $r = 0.397$ , which is also significant at  $p < 0.01$ .



## **CHAPTER FIVE**

### **5 Conclusion and Recommendations**

#### **5.1 Introduction**

The study's most important finding is identified and discussed in this chapter. The various issues analyzed in the previous chapters have contributed valuable information into the influencing factors of project success across phases of construction project across various construction industries and significances of delegation as an important tool towards project success. These insights have informed the conclusions and recommendation of the study on possible ways to determine whether there is a relationship between effective project delegation systems and the complexity of a construction project.

The study objectives as identified were;

1. To evaluate the influencing factors of project success across phases of construction project across various construction industries;
2. To identify the significances of delegation as an important tool towards project success;
3. To evaluate effective project delegation strategies that could be employed in construction; and
4. To determine whether there is a relationship between effective project delegation systems and the complexity of a construction project.

The study concludes by enumerating a number of recommendations aimed at addressing whether there is a relationship between effective project delegation systems and the complexity of a construction project within the study area. It is expected that these recommendations if implemented would contribute to effective project delegation systems in construction projects in the country as well elsewhere.

#### **5.2 Conclusion**

This research work was involved in evaluating the influencing factors of project success across phases of construction project across various construction industries; identifying

the significances of delegation as an important tool towards project success; effective project delegation strategies that could be employed in construction as well as determining whether there is a relationship between effective project delegation systems and the complexity of a construction project. With the help of data collected and the analysis carried out, it was clearly shown that skill acquisition, and productivity, followed by efficiency are the highest ranked among the significance of delegation as an important tool towards project success.

According to the data obtained from the respondents, it was deduced that the management contracting (MC), design-build/finance/operate (DBFO), and construction manager as constructor (CMR) are the highest ranked critical success factors for different project delivery methods and project delegation strategies.

### **5.3 Recommendations**

In view of the research carried out on the key success factors for successful delegation in construction project management, the following are the recommendations inferred:

1. The factors identified must be put in place by different stakeholders in the construction in order to achieve a construction of required standard and cost.
2. It is a known fact that new skills are learnt and developed through delegation as members are compelled to learn new orientations in order to carry out a specified instruction. Construction project management will be highly favored due the fact that construction team works well with the newly acquired skills to implement functions in executing different stages of the construction project; it is therefore recommended that firms should pay attention the skill acquisition at all time.
3. Productivity is said to be enhanced when delegation is put into place, as productivity cuts across every facet of planning, execution and management as it brings the best out of the members involved. Delegation works well in bridging the gap between production and efficiency related to the construction. On this not it is recommended that productivity of each project and services should be well planned for and should be planned at the inception of every project.
4. Efficiency by delegating functions to others in the construction industry, the project manager transfer responsibility unto the rest of the construction team

whose skills fit perfectly into the mode of operation identified to be executed. The efficiency of the construction project is enhanced; better projects are executed within the set duration of contract. This action is said to bring about good efficiency in the firm so it is recommended that it is of necessity to pay consideration to efficiency as a major determinant of firm's progress.

5. Delegating activities in construction gives the delegator the time and ability to focus on other higher-level tasks related to the project or other projects handled by such personnel. Since it's a known fact that delegating activities favors the construction sector, it is recommended that time management practice should be applied at all time in the organization.
6. In case where the delegation of work is to a professional who is not well versed in doing the task, delegation plays a vital role in coaching and teaching others. The delegated functions will in turn spun the construction team to want to get better at whatever function and from such, there is a transfer of knowledge and development is bound to occur under such situation. Development of a firm depends on a well task is been delegated, so it recommended that delegation process should be properly carried out.

#### **5.4 Area of Further Study**

This research believes that research is a journey and not a destination. In this respect, the study recommends further research in the following areas:

- i. Evaluation of the effect of critical success factors on project productivity in construction industry.
- ii. Assessment of the contribution of delegation process to the improvement of the fifth industrial revolution.
- iii. Assessment of the impact of delegation to the eradication of delay of construction project process as a means of improving sustainability.

**Declaration of Authorship**

I hereby declare that this research work is carried out by me without the help of any personnel. All works used from publications are well cited and well-arranged according to the research rules and regulations.

30.07.2021



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Date

Signature of student

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