INFLUENCE OF LABOUR MANAGEMENT PRACTICES ON PROJECT DELIVERY OF CONSTRUCTION FIRMS IN ABUJA

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MINNA

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL, FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF TECHNOLOGY (MTech) IN CONSTRUCTION MANAGEMENT

OCTOBER, 2023

DECLARATION

I hereby declare that this thesis titled **"Influence of Labour Management Practices on Project Delivery of Construction Firms in Abuja"** is a collection of my original research work and it has not been presented for any other qualification anywhere. Information from other sources (published or unpublished) has been duly acknowledged.

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CERTIFICATION

This thesis titled "**Influence of Labour Management Practices on Project Delivery of Construction Firms in Abuja**" by Godwin, Godslove (MTECH/SET/2019/9678) meets the regulations governing the award of degree of Master of Technology in Construction Management of Federal University of Technology, Minna and it is approved for its contribution to scientific knowledge and literary presentation.

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DEDICATION

This thesis is dedicated to the Almighty God, the all-sufficient Father

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ABSTRACT

Globally, the construction industry is one of the major sources of employment generation to the populace of any nation. The industry provides infrastructural facilities such as roads, railways, airports, health care centres, schools, housing and other buildings for developed and developing nations across the globe. Despite the aforementioned benefits of the construction industry to any nation's economy, the industry has frequently encountered poor project delivery and delay in project delivery as a result of inadequate and effective utilisation of labour management practices, especially in medium and large-scale projects. Hence this research aimed to assess the influence of labour management practices on project delivery of construction firms in Abuja, with a view to improving project delivery. A quantitative research method was adopted involving administering 109 well-structured questionnaires to registered construction firms in Abuja. The quantitative strand was analysed using mean score, percentiles, Spearman correlation, and linear regression, using Microsoft Excel, and Scientific Package for Social Science (SPSS) 21. The results showed that the most frequently high utilised labour management practices are workforce planning (4.08), training/development (3.98), health/safety (3.94) recruitment/selection (3.94). The results also revealed that the top five factors influencing labour management practices are technology (4.20), productivity (4.13), training/development (4.01), motivation (3.99)and workforce planning (3.95) Furthermore, the most important critical success factor of project delivery are realistic time estimate (3.93), realistic cost estimates (3.84), client involvement (3.83), quality (3.79), and project planning (3.74). The results revealed that labour management practices have a positive and statistically significant influence on project delivery, with a p-value of <.000. Hence, all the development strategies for improving labour management practices are significant and effective based on the3.50 benchmark, mean score and significant (p-value). This indicates that labour management practices are important to the project delivery success. Therefore, in order to overcome the challenges of labour turnoverresulting from lack of training and development, compensation and benefits, incentive and rewards and reducing the low productivity of the employees in the construction industry, appropriate labour management practices should be put in place in order to improve project delivery.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Globally, the construction industry is one of the major sources of employment generation to the populace of any nation (Opawole&Jagboro, 2017). The industry provides infrastructure facilities such as roads, railways, airports, health care centres, schools, housing and other buildings for developed and developing nations across the globe (Ruya*et al.,* 2018). As far as development is concerned, the Nigerian construction industry is not left out as it contributes approximately 1.4% to the nation's gross domestic products (GDP). This confers that the Nigerian construction industry holds great potentials for improving the national economy (Okoye, 2016; Olanipekun& Saka, 2019).

Despite the aforementioned benefits of the construction sector to any nation's economy, the industry has frequently encountered poor project delivery (Samuel *et al.,* 2016). This is because the sector relies heavily on employee contributions, which are frequently ineffectively managed (Chen *et al.,* 2017). In reality, the construction sector is one of the most labour-intensive and largest employersof labour in the majority of countries of the world (International Labour Organisation, 2015).

Currently, the construction industry is still expanding quickly, which has an impact on the rising demand for certain components of the construction services sector, including labour. One of the key factors that affects the continuity and successful completion of construction projects is labour (Nay & Aye, 2014). Controlling manpower issues, raising worker productivity, and lowering project time and expense overruns are all examples of labour management in the building construction industry. Good labour management practices are required to improve employee performance. Practices in

labour management include: workforce planning, recruitment and selection, training and development, performance management, health and safety, compensation and benefits, and labour relations. An effective utilisation of these practices will enhance the performance of the workers, which in turn leads to successful project delivery. Availability of labours that have good scales is a key factor to get a good project success(Nay & Aye, 2014).

Different stakeholders have different ideas of what constitutes a successful construction project. If the goals and expectations are met, a project is considered successful. These goals and expectations could cover a variety of issues, such as monetary, technical, social, educational, and human issues (Rami *et al*., 2021). According to Fadun and Saka (2018), a construction project's success is defined by how well it meets the owner's criteria for cost, time, safety, quality, and overall value. Construction projects must be planned, organized, scheduled, implemented, managed, monitored, controlled, and tracked by the construction manager in order to minimize the impact of any circumstance or event that could jeopardize project success. Thus, it is essential for project managers in the construction sector to accomplish these goals through the planned coordination and managed execution of challenging construction tasks and activities (Okoye *et al*., 2015). For the construction industry to meet projects' primary goal (successful project delivery), labour management practices should be a significant and continuous concern.

The value of human element in any organisation cannot be overstated. Land and capital, which are non-human factors of production, are worthless without labour to coordinate them and to operate machinery and tools and without management to coordinate all other factors toward the accomplishment of the objectives of the organisation, whether those objectives are the production of goods or the provision of

services. The effectiveness and efficiency of an organisation are, in fact, only as good as its workforce (Igbokwe, 2021). Traditional personnel management views employees as machines that must be kept lubricated or they will break down or stop working, which is essentially what human resource management aims to do in organisations. No matter how big or wealthy an organisation is, its employees are what determine its success (Igbokwe, 2021).

According to Hassan (2016), the working environment that could prevail in an organisation depends on the relationship between labour and management. As human variables in an organisation, a positive working relationship between labour and management is essential for any organisation to function well. As long as conflicts or disputes exist inside an organisation, labour-management relations and labour management practices cannot be overemphasized.A well-established relationship between the workforce (labour) and the management of any organisation will uphold harmony in the organisation thereby enhancing productivity, project delivery and organisational efficiency at all levels (Igbokwe, 2021).

According to Alaghbari*et al.* (2019), project performance is determined by the effect or degree of labour management practices during execution. This suggests that the success or failure of any project is determined by the talents and abilities of the individuals engaged in its implementation. Thus, labour management practices are a crucial aspect in the timely completion and success of a construction project delivery (Sherekar*et al.*, 2016). In a related development, Srilakshmi*et al*. (2018) asserted that the success of any construction projects delivery depends on the factors influencing labour management practices and its overall impact on the project. Therefore, it is evidence that to overcome some of the challenges associated with effective projects delivery in the construction industry, it is imperative that all stakeholders working in the

construction industry comprehend and recognize the value of labour force, labour management, and labour management practices that can boost project delivery (Wong *et al.*, 2016). Thus, the study is to assess the influence of labour management practices on project deliveryof construction firms.

1.2 Statement of the Research Problem

The construction sector generally has to deal with a number of issues caused by diverse systems. The application of appropriate attention to effectiveness, the execution of standard projects, and the construction management system, among other aspects that have an impact on the construction sector, has been noted as a challenge (Ogunde*et al*., 2017). These issues include lack of benchmarking practices, weak contractor and consultant ability, corruption, lack of cooperation and professionalism, and delay in the application of construction industry delivery policies (Mengistu & Mahesh, 2020).

However, studies by Obiwuru*et al.* (2015) and Bhargavi and Yaseen (2016) revealed that the performance of labour management practices is definitely impacted by the level of experience and skill, which indirectly affect the nature of projects that will be delivered. This suggests that the factors impeding the use of effective labour management practices are a poor welfare management, lack of motivation, poor leadership, improper planning and control, inadequate training, the complexity of the work, a lack of materials, malnutrition, illness, absenteeism, high labour turnover, and unfavourable environmental and climatic conditions, result in subpar project delivery. According to studies, the construction industry continues to face a number of problems, such as low productivity, poor safety, and poor project quality delivery (Naoun, 2016; Ohueri*et al*., 2018). One of the main causes of the aforementioned problems is inadequate labour management practices, especially in medium- and large-scale projects (Shan *et al*., 2016; Alaghbari*et al*., 2019).

According to Yohannes (2019), finding effective retention strategies is a management challenge, particularly in a setting where employees are subject to predictable pay rise demands. Better performance requires industrial harmony and cooperation, which can only be achieved with solid labour management relations and practices (Felicia, 2012). In a related development, Nwokenkwo (2019) revealed that the high rate of subpar project completion in Nigeria's construction industry, which occasionally results from ineffective labour management practices needed for the project delivery and component labour management to arrest the ugly trend of project failure, is seriously affecting the nation's economic growth. This is a result of a number of issues faced by the contractors, including a lack of funding, insufficient project cost control, ineffective labour management practices, and others. According to Nwokenkwo (2019), the majority of projects are not completed because the labour force needed to complete them efficiently and effectively is underestimated. Therefore, this research seeks to assess the influence of labour management practices on project delivery (CSF) of construction firms in Abuja. Based on the identified problem, this study intends to answer the following questions:

i. What are the labour management practices that are commonly used in construction firms in Abuja?
ii. What are the factors influencing the effectiveness of labour management practices of construction firms in Abuja?
iii. How can the project delivery(critical success factors) of construction firms be assessed?
iv. What is the relationship between labour management practices and project delivery (critical success factors)?

v. Which strategy can be used to improve labour management practices and project delivery of construction firms in Abuja?

1.3 Aim and Objectives of the Study

The aim of this study is to assess the influence of labour management practices on project delivery (critical success factors) of construction firms in Abuja, Nigeria with a view to improve project delivery in the construction industry. In order to achieve this aim, the following specific objectives are set to:

i. Assess the labour management practices that are commonly used in construction firms in Abuja;
ii. Determine the factorsinfluencing the effectiveness of labour management practices of construction firms in Abuja;
iii. Assess the project delivery (critical success factors) of construction firms;
iv. Established the relationship between labour management practices and project delivery (CSF).
v. Established strategies for improving labour management practices for effective project delivery in the construction firms in Abuja.

1.4 Justification for the Study

Currently, there is a low regard for the profession of a construction labour, which has a detrimental effect on the quality of construction projects. Unsatisfactory labour conditions and management practices are the main causes of low value. These issues have been the subject of numerous studies in an effort to raise awareness (SLIMreport, 2015; Dainty *et al*., 2015; Liska, 2016; Belic, 2017; Chini*et al*., 2019). Performance evaluation in organisations is fundamentally dependent on improved labour management (Demeter *et al*., 2017). According to Prachi *et al*. (2016) time, cost, and quality are the three fundamental planning components of building. These concepts

have a tight connection to one another. Another important concept in construction planning is labour management, which directly relates to the three constraints already described. Change in work, disruption, and rework are all highly correlated with lower labour performance. Lack of materials and information and needing to do the work out of order are the two most major types of disruption.

According to Roshan and Anjay (2020) the key issues for labour management are the provision of leave and compensation for undesirable leave. Other issues are lack of safety facility, remuneration, and job guarantee. Furthermore, the bid documents must mention the provision of insurance, camp amenities like toilet, health and safety facilities and traffic management. The most crucial elements for boosting labour productivity and enhancing project delivery are good worker management, good working habits, job satisfaction, respect for labour, and welfare facilities on the job (Nay and Aye, 2021).

According to Ndolo*et al*. (2018), labour management practices significantly influence the way projects are delivered. In a related development, Nwokenkwo (2019) asserted that the growth and development of the Nigerian construction industry is predicated on timely project delivery, which is as a result of effective labour management. The methods and strategies have demonstrated similar objectives, which focus on the issue of job quality, higher productivity, less resource waste, and avoiding going over budget and contract duration. Although several studies on labour management relation, and labour management practice on project delivery exist in developing countries, very few exist in Nigeria context. Thus, this is a significant knowledge gap that must be filled. This study therefore, sought to bridge the knowledge gap by assessing the influence of labour management practices on project delivery (CSF) of construction firms in Abuja. The outcome of this study will help to enhance labour management practices on project

delivery in the construction industry; which will provide insights that would enable construction firms to perform in a more efficient and competitive manner. The study will also contribute to the body of knowledge in construction management by identifying and prioritising the labour management practices that are suitable to enhance labour productivity on project delivery. The study will be beneficiary to the stakeholders in the construction industry in Abuja by identifying strategies for improving labour management practices. Improving labour management practices strategies has the potential to decrease construction costs and increase construction companies' profit margins. It will give credence to the success associated with adequate incentives packages to motivate labours workers for higher output in construction projects. Enhancing safety and reducing conflicts: The research can also provide insights into how effective labour management practices can enhance safety and reduce conflicts on construction sites in Abuja, Nigeria. Additionally, the study can serve as a foundation for future researchers, by contributing to the exiting body of knowledge in project delivery, labour management and construction management.

1.5 Scope and Delimitation of the Study

Thestudy assessed the influence of labour management practices on project delivery (critical success factors) of construction firms in Abuja. Therefore, the unit of analysis for the study are the various selected registered construction firms in Abuja.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 The Construction Industry

The success of both industrialized and developing countries' economies depends heavily on the construction sector. It increases a nation's economic productivity and competitiveness, provides infrastructure, and creates jobs (Ahmad & Asif, 2021). infrastructures are constructedin the construction sector, which also creates jobs and increases the GDP and GNP of both developed and developing nations. For instance, the construction industry, together with its professional services and supply chain, contributes 7% annually to the GDP and generates over £110 billion in production annually in the United Kingdom.In Hong Kong, it accounted 9.2% of the labour force and contributed 5.6% to GDP (Guo *et al*., 2019).

Nigeria's construction sector generates over 70% of the country's fixed capital formation and 3.88% of its GDP (Abdullahi &Bala, 2018). As the largest employer of construction labour in Africa, the industry employs up to 8 million people, or nearly 25% of Nigeria's workforce (Abdullahi &Bala, 2018). This shows how important the sector is to the Nigerian economy (Ndolo*et al*., 2018). The construction sector is important for the socioeconomic and sustainable growth of both established and developing nations. In addition to fostering innovation and technological improvements, it helps build infrastructure, generate jobs, revenue, and reduce poverty (Akinyemi &Ogunlana, 2021).According to Bello and Saka (2017), the sector employs young people who are unemployed or underemployed and provides housing and infrastructure like as roads, railways, hospitals, schools, offices, and dwellings.

2.2 Concept and Characteristics of Labour Management

Labour is a critical and an essential component of the construction industry, referring to the physical and mental work undertaken by skilled and unskilled workers in the construction of buildings, infrastructure, and other related projects. Labour refers to "all physical and mental effort expended by workers, both skilled and unskilled, in the production of goods and services" (Tukur *et al.*, 2021).

In the construction industry, the concept of labour encompasses a wide range of tasks, including manual labour, supervision, and management (Kang *et al.*, 2021). It is characterized by its diversity and complexity, with different types of workers performing specialized tasks. Skilled labour includes masons, carpenters, electricians, plumbers, and other tradespeople who have specialized training and experience in their respective fields. Unskilled labour includes general labourers, who perform tasks such as carrying materials, cleaning up job sites, and assisting skilled workers ((Kakulu&Mhaiskar, 2021).

The characteristics of labour in the construction industry also include its temporary nature, with workers often employed on a project-by-project basis. Labour is also characterized by its physical demands, with workers often required to perform heavy lifting and work in challenging environments, such as heights or confined spaces. Additionally, labour in the construction industry is subject to strict health and safety regulations to protect workers from potential hazards on the job (Liu *et al.*, 2021; Kling &Rönnberg, 2021).

Effective labour management practices are critical for maximizing the productivity and performance of construction workers. This includes ensuring adequate training and development, fair compensation and benefits, job security, and opportunities for advancement. Additionally, effective communication and collaboration among workers

and management can help to foster a positive work environment and enhance worker satisfaction and productivity (Oyedele*et al.,* 2018; Wang *et al.,* 2020; Ishaq*et al.,* 2021).

Globally, the concept and characteristics of labour in the construction industry highlight the importance of skilled and unskilled workers in the successful completion of construction projects, as well as the need for effective management practices to support worker well-being and project success (Afolabi *et al.,* 2020).

The International Labour Organisation (ILO)defined labour as all types of work, whether remunerated or not (ILO, 2021). According to a study conducted by the International Labour Organization (ILO) in 2021, Labour is the foundation of economic development, and access to decent work is critical to reducing poverty and inequality, promoting inclusive growth, and achieving sustainable development (ILO, 2021). However, in this context, labour is defined as a term associated with to all physical and mental work undertaken for financial rewards (Lang, 2021; Janssens &Steenbergen, 2020).

Labour, as stated in the concise Oxford Dictionary, refers to both physical and mental effort aimed at satisfying the requirements of a commodity (Oxford University Press, 2021). The term "worker" is used synonymously with labour and refers to an individual who has agreed to perform clerical, professional, or mutual work under a contractual arrangement (Merriam-Webster, 2021). The term is typically linked to employment, unemployment, work, trade unionism, and organisational relationships. According to Zhang *et al.* (2020), labour productivity has become a primary concern for organisations in various industries. This focus on labour productivity can be attributed to the critical role of labour as a key resource in production processes. Additionally, Zhang *et al.* (2020) highlighted the importance of labour in managing the inputs and

outputs of production processes, which can significantly impact productivity levels. Similarly, a study by Kwon and Adler (2021) emphasized the critical role of labour in productivity and highlighted its ability to exert control over production processes. Kwon and Adler (2021) noted that labour is a crucial component in enhancing organisational performance and competitiveness, as it is the primary driver of output in most industries.

2.3 Labour Management Practices in the Construction Industry

The construction industry is one of the largest sectors globally, employing millions of workers worldwide and its success relies heavily on labour management practices (Nieuwenhuis*et al.,* 2016). As with any industry, with numerous challenges such as tight deadlines, fluctuating demand for services, and volatile market conditions, effective labour management practices are crucial for ensuring that projects are completedwithin time and budget, and to a required maximum quality and stanadards (Choudhry & Fang, 2018; Anwar *et al.,* 2019). In this section, explores the various labour management practices that are commonly used in the construction industry, and their importance for the success of construction projects.

2.3.1 Workforce planning

Effective workforce planning is essential for the success of construction projects. It involves forecasting labour needs and accessing the number and types of workers required for each project (Liao *et al.,* 2017; Liu & Ling, 2019). According to Hossain and Chan (2015), workforce planning enables construction companies to identify the necessary skill sets and qualifications needed for each job, as well as the number of workers needed to complete the project within time and budget.

The management tool of manpower planning is now crucial for structuring and balancing the workforce's skill sets. Which is also known as "human resource

planning," is placing the ideal mix of individuals in the ideal setting at the ideal time and place, doing the ideal tasks for which they are qualified (Nay & Aye, 2014).

2.3.2 Recruitment and selection

Recruitment and selection are critical labour management practices in the construction industry. Once the workforce planning is complete, the next step is to recruit and select workers with the necessary skills and qualifications (Wang *et al.,* 2015; Fung *et al.,* 2016). According to Leiringer and Samuelsson (2016), recruitment and selection processes are crucial for ensuring that workers are well-suited for their roles, and can add to the project success. Recruitment and selection processes can involve advertising job openings, screening resumes, conducting interviews, and verifying references. According to Nay and Aye (2014) one of the activities that has the biggest impact on an organisation's performance is recruitment as a human resource management function. Recruitment is defined as "the set of activities and processes used to legally obtain a sufficient number of qualified people at the right place and time so that the people and the organisation can select each other in their own best short- and long-term interests." On the other hand, selection is described as the process of picking the best workers out of all the construction workers and matching the right individuals with the proper jobs. In other words, selection is the process of matching an applicant's talents and qualities to the organisation's requirements. Selection can be used to draw in and hire new people who have the aptitudes, know-how, and experience necessary to advance an organisation's objectives (Nay & Aye, 2014).

2.3.3 Training and development

Construction workers need to have the necessary knowledge and abilities to perform their jobs efficiently. Therefore, training and development programmes are crucial for ensuring that workers have the skills and knowledge they need (Akintoye&Ajibade,

2015; Alwi*et al.*, 2017). According to Teoand Ling (2018), training and development programs should be ongoing, and should focus on both technical and soft skills, such as teamwork, communication and problem-solving. Effective training and development programmes can increase the overall quality of the workforce and add to theconstruction projects success (Junaidi& Ismail, 2019). Training and development can also be seen as a process of developing work-related abilities and knowledgein employees for the purpose of enhancing performance systematically(Nay & Aye, 2014).

2.3.4 Performance management

Performance management is another crucial labour management practice in the construction industry. It involves setting performance standards, providing feedback and coaching, and conducting performance evaluations to ensure that workers are meeting expectations (Yap &Skitmore, 2016; Ling *et al.*, 2017). According to Dainty *et al.* (2019), Liao and Lin (2021), effective performance management practices can help workers to stay motivated and engaged, and can contribute to the project success.

2.3.5 Health and safety

Construction sites are inherently dangerous, so it's important to establish and enforce safety procedures to protect workers from injury and illness (Lingard &Rowlinson, 2015). According to Hallowell *et al.* (2017) and Kamardeen*et al.* (2019), effective health and safety practices in the construction sector include identifying potential hazards, providing workers with appropriate safety equipment, and enforcing safety regulations. Good health and safety practices not only protect workers but also improve productivity and reduce downtime due to accidents and injuries.

According to Nay and Aye (2014) an attitude of positivity reflects safety behaviour. Due to workers' poor attention to work regulations, many workplace accidents and

incidents, particularly those that happened on construction sites, occurred. The employees need to understand how crucial a part they play in the success of the buildingconstruction. The employees' awareness and perception of safety, health, and their working environment are critical components to improving building construction for the benefit of the workers themselves. An atmosphere that is safe and healthy at work helps to increase productivity, lower accident rates, prevent health problems, and foster positive labour-management relations.Effective safety and health management helpfirms in upholding their legal obligations to ensure worker safety and health as well as controlling their safety and health risks (Nay & Aye, 2014).

2.3.6 Compensation and benefits

A very attractive competitive compensation and benefits packages are crucial for attracting and retaining workers in the construction sector (Imbeau & Wallace, 2016). According to Oyedele*et al.* (2019) and Lu *et al*. (2020), construction companies should offer competitive wages, salaries, and benefits packages, such as health insurance and retirement plans, to attract and retain workers. Competitive compensation and benefits can help to reduce turnover and improve the overall quality of the workforce (Aziz & Askar, 2021).

2.3.7 Labour relations

Labour relations are an important aspect of labour management practices in the construction sector. Construction companies must negotiate and maintain relationships with labour unions, manage labour disputes, and ensure compliance with labour laws and regulations (Warner *et al.,* 2018). According to Serrat (2017) and Ayalew (2019), effective labour relations practices can help to promote a positive work environment and ensure that workers are treated fairly and equitably.

Effective labour management practices are crucial for the success of construction projects. Recruitment and selection, training and development, workforce planning, performance management, labour relations, health and safety, compensation and benefitsare all important aspects of labour management practices in the construction sector (Gao*et al.*, 2021; Zhao*et al.*, 2020; Kim & Kim, 2020; Wang *et al.*, 2019). By implementing these practices effectively, construction companies can improve the quality of their workforce, reduce turnover, and complete projects on time and within budget.

Reasons for effective labour management relations. According to Gao *et al*. (2021) there is the need to establish good effective labour management relations in most industries for the following reasons:

(i) To improve communication between management and employees.

(ii) To increase satisfaction at work.

(iii) To inspire passion and management loyalty among the workforce.

(iv) To influence the employees' output and effectiveness.

(v) To foster greater collaboration and ego among employees of the organisation.

(vi) To lessen hostility and disagreements between management and employees, as well as to assist in resolving disciplinary issues.

(vii) To promote industry expansion by eliminating labour-management disputes that impair output.

(viii) To promote employees' involvement and dedication in achieving not only the organisation's aims but also their own demands and goals.

2.4 Effectiveness of Labour Management Practices in Enhancing the Productivity and Performance of Construction Workers

The construction industry is a dynamic and challenging field that requires the use of skilled labour to ensure the success of projects (Kailash& Shukla, 2022). The productivity and performance of construction workers can be influenced by various factors, including labour management practices. However, it is critical to understand the functions of effective labour management practices in improving the performance and productivity of workers (Arana-Landin & Gomez-Soberon, 2021; Díaz-Álvarez*et al.*,2021). Recent research has shown that labour management practices play a significant role in improving the productivity and performance of construction workers. According to a study by Alajmi*et al.* (2021) and Alam*et al.* (2021), effective labour management practices, such as providing clear communication, adequate training, and fair compensation, can lead to higher quality work and greater job satisfaction among workers. The study also found that the use of technology and the implementation of lean principles can further enhance labour management practices in the construction industry.

Similarly, research by Albrecht *et al.* (2021) highlights the importance of leadership and communication in promoting effective labour management practices in the construction industry. The study found that providing workers with clear job expectations and providing them with regular feedback and recognition can lead to increased productivity and performance. Therefore, effective labour management practices are essential for the success of any construction project. Employers in the construction industry should strive to implement effective labour management practices to ensure the success of their projects and the satisfaction of their workers.

Labour productivity has become a crucial focus for both public and private organisations. One potential explanation for this emphasis on labour productivity is its status as a universal and essential resource. Other justifications for utilizing labour to enhance productivity include its ability to exert control over inputs and outputs, its recognition as the most significant factor of production, and its status as the most frequently measured production factor (Kwon & Adler,2021). Productivity is a measure of output per unit of input. It is a key factor in determining an economy's growth potential, and it plays a critical role in driving economic competitiveness, job creation, and higher standards of living for citizens (Ihedigbo*et al*., 2023). In terms of the construction industry, productivity can be defined as follows: Construction productivity is the efficient use of labour, material, equipment, and technology to complete a project on time, within budget, and with the desired level of quality (Akintoye*et al.*, 2015).

According to the Chartered Institute of Building (2019) productivity is not just about working harder, it's about working smarter. It's about finding ways to streamline processes, eliminate waste, and optimize resources to maximize output while minimizing input. It is expressed as:

$$\text{Productivity} = \frac{output}{input} \tag{2.1}$$

$$\text{Labour Productivity} = \frac{output}{Labour\ cost} \tag{2.2}$$

2.5 Factors Influencing Labour Management Practices

Construction labour management practices is a crucial factor that affects the construction projects success in Nigeria. Several factors can influence labour management practices in the construction sector, including economic, social, technical, and environmental factors (Ola-David, 2020; Adeyemi &Oyebisi, 2021, Adegbie*et al.*, 2021).

2.5.1 Technology factor

Technology is the process of organizing and translating data into a unique set of digital records. The input is then translated into binary data, which is comprehensible and can be processed by computers and other devices (Rouse, 2017). According to Ezeokoli*et al*. (2016) digital technology is the process of converting analog information into digital forms employing current technologies that provide new capabilities for greater performance. The gathering of cutting-edge equipment and software programs that may be employed throughout the many stages of a construction project, from planning to completion, is another aspect of digitalisation (Ikuabe*et al*., 2022).Due to its capacity to increase operational efficiency, effectiveness, and open up new prospects, technology has become a widely accepted idea in today's world. Industries including banking, manufacturing, and retailing have all learned to appreciate the value of technology and have adapted to the future by employing it as a fresh strategy to guarantee competitive advantage, efficiency, and successful project delivery (Osunsanmi*et al*., 2018).

Because technology may replace workers, raising unemployment rates, there is a strong institutional barrier in the construction sector. However, the setup and ongoing supervision of construction robotics by qualified employees can take a long time (Usman & Said, 2014). As a result, a new construction profession with a strong background and specific training in robotics, algorithms, and software needs to be formed in order for robotics to be effectively transitioned onto construction sites and become more commonplace (Mohammadpour*et al*., 2018; Xin *et al*., 2022).

2.5.2 Environmental factor

The construction industry faces various productivity challenges, particularly related to the working environment of its workers. These challenges are prevalent in both developed and developing countries, and they significantly impact the performance of

construction workers, especially those with low skills (Naoun, 2016; Ihedigbo*et al*., 2023). Theemployee'sperformance in the construction sector is influenced by multiple factors, including their well-being, safety, access to resources, and the overall work environment (Naharuddin&Sadegi, 2013; Ihedigbo*et al*., 2023). A conducive physical workplace encourages consistent and sincere employee engagement, minimizing absenteeism, job delays, and other unfavourable aspects (Chika & Dominic, 2017). Effective communication and motivation strategies also play a crucial role in inspiring employees to be highly committed to their work (Gupta & Shaw, 2014).

The successful completion of construction projects within the agreed-upon timeframe and budget is a key measure of project success. However, the absence of a positive work environment can lead to a decline in employee performance (Chika & Dominic, 2017). Adverse work environments can cause chronic stress among employees, necessitating the identification and mitigation of such factors (Semiu*et al*., 2022).

Several indicators of the working environment that impact construction workers' performance have been identified in the literature. These include factors such as lighting conditions (Hyder, 2016), risks and safety measures (Parida*et al*., 2016), access to medical services (Aina& Adesanya, 2015), provision of training facilities (Ikediashi*et al*., 2012), challenges posed by environmental conditions (Venugopal*et al*., 2016), availability and maintenance of equipment, job execution errors and delays (Enshassi*et al*., 2007; Zhang &Huo, 2015), coordination and cooperation issues (Jarkas& Radosavljevic, 2013; Aina& Adesanya, 2015), transportation concerns (Adamu*et al*., 2011; Funso*et al*., 2016), and other related barriers.

2.5.3 Productivity

Unemployment and inflation from low productivity are likely to reduce the average person's living standard. In order to build the economy and increase production for the

advantage of all parties in employment relations. Modern labour management practices have improved productivity and project delivery. Consequently, the tendency has encouraged labour management professionals to get involved in matters influencing productivity and competitiveness (Chukwuma, 2015). In the developed and developing countries, many organisations have the habits of using the idea or concept of labour management practices as a means for the improvement of workers productivity (Chihongaki, 2019).

A service's ability to be produced is measured by productivity. More specifically, productivity measure how well-allocated resources are used to meet deadlines for achieving stated quantity and quality goals. Productivity can also be thought of as an index that compares the output (services) to the inputs (labour, materials, and energy) utilized to produce the output (Yashwant &Warkhedkar, 2013; Abdel *et al*., 2016; Olughu*et al*., 2022; Ihedigbo*et al*., 2023). Overall, there is not a good and efficient approach to measure production. According to Sharma and Sharma (2014) asserted that, in addition to how much time is spent "mentally present" or productively working while an employee is physically present at their workplace, employee productivity is also dependent on this factor.

To ensure high worker productivity, organisations should address these concerns. However, from the construction instruction viewpoint, productivity is an important factor that may be utilized as an index for project delivery. Productivity is the relationship between an output system's quality of output and the characteristics of the input factors the system uses to produce output (Mbiti, 2008; Olughu*et al*. 2022;Ihedigbo*et al*. 2023). Productivity and labour productivity differ in that the former places emphasis on the relationship between input and output, whilst the latter emphasizes the output of input. Because of the legacy of classical economics thought,

which tends to view direct labour as the only source of value and all forms of indirect labour as "unproductive labour," the practice of using labour, especially direct labour inputs and costs, can be determined and quantified more easily than those of other factors. Therefore, it may be claimed that improving labour is necessary if productivity is to increase. This can be accomplished in a variety of ways. These include: availability of resources, conducive environment, provision of welfare packages and improvement in workers skills (Ihedigbo*et al*., 2023).

2.5.4 Training and development

Employees receive training so they may carry out their responsibilities properly and efficiently. Practical operational abilities that are required for task execution in an organisation are essentially taught throughout training. In other hand, the process of development involves identifying where senior managers' and executives' behaviours and mental capacity which require improvement. These senior managers will be expected to be involved in management development courses to advance their planning, leadership, and decision-making skills (James, 2015).

A person's behaviour, knowledge, abilities, and attitudes must be developed in order for them to perform a job or task to the best of their ability. This is what training and development entails. Concerned about the competences and skills that workers learn through a variety of training and development programmes (Subramaniam *et al*., 2016). Labour management practices requires the use of training and development practises. It is vital for sustaining crucial proficiency while enhancing capabilities, work adaptability, workers motivation, and flexibilities (Sabiu*et al*., 2016). Because there are so few talented individuals available, attracting and keeping them is the key to organisational success. However, investing in training involves a series of on-going investments rather than a single one. The highly dynamic, constantly changing

workplace demands a high level of abilities, thus training is crucial for producing talented workers as well as keeping those high levels of skills (Kumari, 2017).

2.5.5 Employer-employee relationship

The creation of conditions in which good relationship can be developed is a major function of labour management. However, responsibility for the conduct of relationships between the employers and employees rest on both parties. Therefore, the management of any company has the responsibility to initiate and create a condition that will bring about good working relationships between it and the workers. The management has to create an atmosphere of mutual trust and understanding (Ameh& Daniel, 2017). When this is done, it will influence smooth labour relations. In large construction firms, it is fashionable to have a specialized branch of personnel department to deal with industrial relations matters. It can be a unit in the personnel department and designated as industrial relations unit/department (Joel & Andrew, 2020). The Industrial Relation Unit can be saddled with the following functions:

(i) Formation and maintenance of joint voluntary machinery to address the welfare of the workers

(ii) Prevention and settlement of trade disputes between the management and the workers

(iii) Administration of wages and policy of the company.

2.5.6 Health and safety

A healthy worker is a productive worker, so the problem of health is highly important. Procedures for ensuring that workers receive the right care when they are sick are included in provisions for their well-being and safety. The following practices are frequently used by organisations when addressing the issue of employees' health and safety at work (James, 2015).

(i) Conducting a pre-employment physical to make sure the candidate is fit to work.

(ii) Keeping up good environmental sanitation and taking preventative health measures.

(iii) Giving sick employees access to a clinic and medication for proper medical care.

(iv) Maintaining a clean workplace to keep infectious and contagious diseases at bay.

(v) Providing workers with health and safety training.

(vi) Ensuring health and safety environment for workers.

2.5.7 Motivation

An individual's willingness to exert effort toward a specific set of behaviours is characterized as their motivation. In turn, a lack of motivation affects productivity and a variety of symptoms such as low morale, low or declining productivity, poor workplace atmosphere, high employee turnover, an increase in complaints and conflicts, a rise in tardiness and absenteeism, an increase in defective products and rework, an increase in accidents, or an increase in waste (Nay & Aye, 2014).

According Olughu*et al*. (2022) motivating staff is necessary. Motivation as a managerial method for influencing employees' behaviour with the aim of propelling the organization to successfully accomplish its goals. When analysing this strategy, other researchers define motivation as a process that is sparked by a physiological or psychological need and results in a certain behaviour or drive to fulfilled a want or receive a reward. According to this description, motivation may be broken down into three distinct but related dimensions: needs, drives, and incentives.

Wacheke (2017) asserted that motivation is the level of satisfaction of a person's desire. Depending on their level of motivation, an employee may decide to engage in a specific set of behaviours. As a result, an employee's behaviour is influenced by the availability of their motivators. In a related development, Olughu*et al*. (2022) revealed that the fundamental concept of motivation, is a force that propels people to try to accomplish a goal in order to satisfy a need or expectation. Both their aptitude and amount of motivation influence how well they achieve. The factors that drive people to work hard and the benefits and fulfilment they gain from it have an impact on how an organization and its members interact(Wacheke, 2017).

According to Hatch (2006) management must understand the best methods for winning the support of the workforce and directing it toward attaining the organisation's goals and objectives. The fact that motivation is essential for accomplishing organisational goals has been firmly pointed to by him. According to Hatch (2006), motivation may be intrinsic or extrinsic. Extrinsic motivation arises from concrete rewards like pay and perks, safety, promotions, contracts or services, the workplace, and working circumstances. These factors are the main drivers of motivation. These monetary incentives are decided upon at the organisational level and can be beyond the control of specific managers. However, the organisation as a whole should promote this kind of incentive by setting up processes that work to make it available.The supply of psychological rewards leads to intrinsic motivation. These benefits include the chance to put one's talent to use. Simply put, this is about giving each employee more control through the provision of things like specialized training (Wacheke, 2017). Making work tough for employeesincreases motivation. The employee receiving some kind of gratitude and good acknowledgment is another example of a motivator of this nature.

According to Armstrong, line managers have access to and can successfully use these motivators (Armstrong, 2006).

2.6 Project Delivery (Critical Success Factors) of Construction Firms

Project delivery key success factors (CSFs) are characteristics, circumstances, or variables that, when correctly sustained, maintained, or controlled, can significantly impact the project's success. These factors are seen from the perspective of project management.(Milosevic &Patanakul, 2005; Zarina *et al*., 2014). Most construction organisations find that by examining the critical success factors (CSFs) for enhancing the performance of their construction projects, management activities in construction projects can be better understood. Over the past 20 years, the CSFs technique has been developed and made well known (Chan *et al*. 2004). However, most studies concentrate on the typical "iron triangle" of cost, quality, and schedule (criteria for measuring the success of a project) as opposed to sustainable structures (Walker & Shen, 2002).

But for construction professionals, defining project success has remained a challenge. As a result, numerous researches on the crucial variables influencing the success of construction project delivery have been carried out in recent years (Das &Ngacho, 2017; Tayeh*et al*., 2018). Various critical success factors (CSFs), including safety, quality, time and scheduling, planning, resources, cost and finance, technology, environment, organisation, management, experience, size and type of prior projects, have been identified by various researchers; however, no general consensus has been found (Ramlee*et al*., 2016; Rami *et al*., 2021). The five categories of CSFs identified by Chan *et al*. (2004) include project-related, project processes, project management activities, human-related, and external environmental factors.CSFs were categorized by Babu (2015) into ten primary categories: cost, time, quality, productivity, customer satisfaction, community, people, health and safety, innovation and learning, and

environmental issues. The following are the identified project delivery (critical success factors) of construction firms:

2.6.1 Realistic time estimate

Realistic "building time" is becoming important since it frequently acts as a crucial criterion for measuring project performance and contractor productivity (Albtoush*et al*., 2022; Ihedigbo*et al*., 2022). According to Mahamid (2016), One of the factors affecting a project's success, is timely delivery. Any delay will therefore affect how successful the project is. Albtoush*et al*. (2022) asserted that modification orders are typically regarded as one of the major factors that contribute to building project delays.According to Oyewobi*et al*. (2016) deviations during construction are time-consuming and expensive because they raise both the duration and cost of the project by 34% and 29.5%, respectively. These changes also result in more project rework and demolition, which in turn causes client discontent and project failure. In construction sites, equipment breakdowns are a prevalent issue that prolong downtime and necessitate expensive repairs (Tsado& Theophilus, 2014).

2.6.2 Realistic cost estimate

Cost output is generally understood to be the difference between the value of the work that has been performed and the actual cost of the project's progress. In order to highlight the value for project finance and prevent the project from incurring unnecessary costs, an accurate bill of goods and an accurate preliminary cost estimate are crucial at the planning stage (Albtoush*et al*., 2022). According to Abdul-Rahman *et al*. (2011) who examined the potential root causes of the financial issues that contribute to project delays, the contractor's unstable financial history, the lack of a project financier, and poor cash flow management are the main causes of delays in projects. Project failure is caused by poorly managed cash flow, which has the opposite effect of

improving the project's time performance(Abdul-Rahman *et al*., 2011).According to Gillanders (2014), nations with high rates of corruption have less-than-optimal infrastructures. The availability of funds and the frequency of payments have a significant impact on the project's progress and success (Tayeh*et al*., 2018). According to Abdul-Rahman *et al*. (2009) one of the main causes of project delays is the client's poor financial management and their challenges in securing financing from financiers. In a related development, Homthong and Moungnoi (2016) asserted that clients should make timely payments to contractors to avoid project delays.The two main client-related elements influencing Malaysian construction projectsare, the client's financial capacity and the timing of progress payments (Yong &Mustaffa, 2012). Due to the contractor's erratic financial status and inability to complete the work, pay salaries to subcontractors, and cover other costs, the project's progress is significantly impacted, which ultimately results in project failure (Tayeh*et al*., 2018).

2.6.3 Quality

The success of a project is largely determined by a number of factors, including quality. However, the size of the construction projects means that there are various issues that make quality difficult to achieve. These include projects that do not adhere to rules and standards, damage brought on by unfavourable weather while projects are being implemented, and the use of subpar materials as a result of high material costs (Albtoush*et al*., 2022).

2.6.4 Client involvement

Project success depends on client participation and collaboration during project delivery. The user's commitment to the project's objectives and participation in the project management process are essential for a successful project (Babu, 2015; Ramlee*et al*., 2016).

2.6.5 Competent project team

For a project to be successful, the project manager's and team members' competence is essential. To guarantee that the project manager and project team have the abilities and dedication required to carry out their duties successfully, it is crucial that they be intelligently selected (Ramlee*et al*., 2016).

2.6.6 Project understanding

The project team needs to be aware of all aspects of the project, including the aims and objectives. The most crucial aspect of a project's success is comprehending its mission (Chan *et al*., 2004; David & Adam, 2017).

2.6.7 Authority of the project manager

In successful projects, the project manager not only has the power to managed the creation of plans, the making of changes as needed, and the execution of them, but also has a strong commitment to achieving project objectives (Chan *et al*., 2004).

2.6.8 Top management support

Project management support has long been regarded as being crucial in determining whether a project will succeed or fail (David & Adam, 2017). For authority, guidance, and support, project management is reliant on top management. The project's worth and backing from top management should be made abundantly evident. It's interesting to note that many senior managers are not aware of the impact their actions have on a project's performance (Ramlee*et al*., 2016).

2.6.9 Communication

According to Semiu*et al*. (2022) the construction industry is seen as heterogeneous. Since it brings together a wide variety of unique professions in order to accomplish a single objective: finishing projects. This heterogeneity also eliminates the cultural and linguistic variation among the experts involved in the operation, making stakeholder

communication ineffective and impeding the professionals' performance and productivity, which in turn has an adverse influence on the project's success. For a group of individuals to successfully accomplish the goal of getting together, communication is the first and most important aspect. The goal is lost and the anticipated outcome is not attained when group communication is inefficient.In order to create an environment conducive to project success, effective communication is essential. In addition to being crucial inside the project team, communication is also crucial between the team, the rest of the organization, and the client (Ramlee*et al*., 2016). Communication is the action of exchanging ideas, messages, or information by speech, pictures, signals, writing, or behaviour. It is the meaningful communication between two people or a group of living things (Semiu et al., 2022). According to Ramlee*et al*. (2016) project communication management, is the procedure necessary to guarantee the timely and appropriate generation, gathering, dissemination, storage, and, finally, disposal of project information.The method offers the vital connections between individuals, concepts, and knowledge that are essential for achievement. Ahuja *et al*. (2009) asserted that the efficiency of a building project management information system (MIS) is determined by how well the project team members are able to communicate with one another and give feedback to one another at various points during the project's life phase.

2.6.10 Adequate project control

In order to compare team performance and project objectives, successful projects have effective control and reporting systems that offer proper monitoring and feedback. The ability to foresee issues, oversee corrective actions, and guarantee that no flaws are missed is provided by adequate monitoring and feedback methods (David & Adam, 2017).

2.6.11 Problem solving abilities

It is impossible to anticipate every potential issue, no matter how meticulously a project is prepared. The project team's ability to respond quickly and take decisive action when issues arise is crucial (David & Adam, 2017).

2.6.12 External factors

The construction projects are impacted by economic, social, political, physical, industrial, legal, cultural, and technology external variables. Physical influencesinclude weather, climate, natural disasters (such as landslides, fires, and storms), and unforeseen geological conditions (Chan *et al*., 2004; Rami *et al*., 2021). According to Muhwezi*et al*. (2014) because external influences come from sources outside the project, it is challenging to detect their presence and exert any control over them. The instability of the financial market, which includes increases in the cost of labour, materials, and transportation, has a substantial impact on cash flow and causes project delays (Abdul-Rahman *et al*., 2009).

2.7 Strategies for ImprovingLabour Management Practices for Effective Project Delivery in the Construction Industry

The construction industry is a vital sector of the global economy, employing millions of workers and contributing to the development of infrastructure and buildings. However, labour management practices and project delivery in this industry have been a cause for concern for stakeholders. Various studies have shown that poor labour management practices and project delivery can result in cost overruns, schedule delays, and quality issues (Behzadan*et al.*, 2019). Therefore, it is essential to provide effective strategy that can help improve labour management practices and enhance project delivery in the construction industry. The following have been identified as the possible strategies for improving labour management practices for effective project delivery:

2.7.1 Stable labour force

A stable labour force is a crucial element of sound industrial relations policy. According to a recent study by Babatunde *et al.* (2021), stable employment is linked to higher job satisfaction and lower turnover rates among employees. Decasualization of the construction industry can improve job security for both employers and employees. As stated by the International Labour Organisation (ILO, 2021), job security is a fundamental right and an essential element of decent work.

2.7.2 Training and development

Training and development of staff is also necessary to improve productivity and labour relations in the construction industry. The ILO (2021) emphasizes the importance of providing training and skill development opportunities to workers to enhance their employability and productivity. In addition, providing adequate facilities to expose staff to modern industrial operations can also enhance their skills and knowledge, resulting in improved productivity (Babatunde *et al.,* 2021). Training and development programs can help improve labour management practices and enhance project delivery. These programs can provide workers with the necessary skills and knowledge to perform their tasks efficiently and effectively. According to a report by the Construction Industry Training Board (CITB) (2021), the construction industry faces a significant skills shortage, with an estimated 217,000 workers needed by 2025 to meet demand. Investing in training and development programs can help address the skills gap and ensure that the industry has a skilled workforce to meet future challenges. Furthermore, it can help improve safety, reduce errors, and increase productivity. In a study by Chen *et al.* (2020), training and development were found to be essential in enhancing safety performance and reducing accidents on construction sites. Similarly,

research by Zhang *et al.* (2020) shows that training programs can help improve productivity and reduce labour costs.

2.7.3 Good wages policy

A good wages policy is crucial for effective labour relations and productivity in the construction industry. According to a study by Chang *et al.* (2021), a fair and competitive wage system can improve employee motivation, reduce absenteeism, and increase productivity. It is important to recognize the different levels of skills within a trade and establish a revised wage structure based on a higher basic wage. Overtime should only be used to overcome bottlenecks and not as a means to increase wages. Overall, improving labour relations and productivity in the construction industry requires a strategic approach that includes stable employment, training and development, and a fair and competitive wages policy. As stated by the ILO (2021), promoting good industrial relations and creating a safe and healthy working environment are crucial elements of sustainable enterprises and sustainable development.

2.7.4 Labour/trade unionism

Trade union structure and attitudes are a direct reaction to the stand taken by employers. Considering the task that needs to be performed by the union and the employer, there is a need for continuous and very close contact between unions and employers in the industry. Trade unionism is a phenomenon that has evolved over time, but its core purpose remains the same - to protect workers' rights and improve their working conditions. According to a report by the International Labour Organisation (ILO), the number of union members worldwide increased by 10 million between 2018 and 2019, reaching a total of 385 million members in 2019 (ILO, 2020). This growth is

driven by factors such as increasing job insecurity, stagnant wages, and the need for collective bargaining to address these issues.

Furthermore, research has shown that union membership can have a positive impact on workers' wages, benefits, and job security. According to Economic Policy Institute (2021) unionized workers in the United States earn an average of 13.6% more than non-unionized workers, and are likely to have means to health care and retirement benefits.

According to recent studies, trade unions continue to play a vital part in advocating for the rights and benefits of workers. In industrial relations system, labour unions have been instrumental in safeguarding the interests of workers and improving their working conditions (Frege& Kelly, 2021). In developed countries such as the United States, unionized workers typically enjoy and earn higher wages and have better benefits compared to non-unionized workers (Bivens &Mishel, 2021).

In Nigeria, trade unions have evolved into powerful movements that not only represent workers but also influence Governmental and public policies. As noted by Iyayi (2018), trade unions in Nigeria have become dynamic national liberators that exercise significant governmental and public authority, acting as caretakers of the people. Despite facing conflicts with the political classes, trade unions have achieved significant victories in their efforts to improve the living standards of workers (Olufemi, 2021). Therefore, trade unionism is an important tool for workers to improve their working conditions and protect their rights. As the global workforce continues to face challenges such as job insecurity and stagnant wages, the role of trade unions in advocating for workers' rights is more important than ever.

2.7.5 Adoption of code of industrial relation's practice

In the construction industry, the adoption of a Code of Industrial Relations Practice can assist managers in improving their industrial relations. The code provides guidelines for establishing appropriate procedures and building relationships that maximize contributions from all involved parties (Construction Industry Institute, 2021).

2.7.6 Adequate compensation

Adequate compensation is also an important factor in motivating employees. A comprehensive compensation plan that includes incentives, bonuses, and profit sharing can improve job satisfaction and performance (Puri*et al.,* 2021). The compensation plan should be well-administered and communicated to employees to arouse their interest in their jobs.

2.7.7 Healthy working environment

A healthy working environment is essential for promoting the physical and mental health of employees. The Occupational Safety and Health Administration (OSHA, 2022) recommends displaying reminders and notices in strategic locations to remind employees of safety precautions and reduce the risk of accidents.

2.7.8 Embracing technology

The use of technology in industry such as the construction sector is becoming more prevalent and has the potential to improve labour management practices and project delivery. Similarly, research by Ahmed *et al.* (2019), Bock *et al.* (2021) and Smith *et al.* (2021) noted that the use of Building Information Modelling (BIM), drones, and robots can improve construction safety, communication, reducing waste, reduce labour costs, improve quality control and increasing efficiency. According to a report by McKinsey & Company (2021), the adoption of technology in the construction sector can improve productivity by up to 60%. Additionally, the use of project management

software can improve communication and collaboration among project stakeholders, leading to improved project delivery.

2.7.9 Prioritising safety

Safety should be a top priority in the construction industry. Safety incidents can result in serious injuries, fatalities, and project delays. According to El-Sayed *et al.* (2022), safety culture, safety management systems, and safety leadership are crucial for improving labour management practices and enhancing project delivery. Employers should provide regular safety training, enforce safety policies and procedures, and provide adequate safety equipment to reduce the risk of accidents on construction sites.

2.7.10 Incentives and rewards

Incentives and rewards can be used to motivate workers and improve labour management practices. These incentives can include bonuses, promotions, and recognition for outstanding performance. It can help promote a positive work environment, increase job satisfaction, and reduce turnover rates. In a study by Wang *et al.* (2021), incentives and rewards were found to be essential in improving productivity, reducing absenteeism, and increasing job satisfaction. Similarly, research by Wu *et al.* (2021) shows that incentives can help improve safety performance and reduce

2.7.11 Effective communication channels and collaboration

Effective communication is a crucial aspect of labour management practices and project delivery. A study by Peansupap and Walker (2021) revealed that communication problems are the primary cause of labour disputes in the construction sector. To enhance communication, it is essential to establish effective communication channels between project stakeholders, including workers, contractors, and clients. According to the Royal Institute of British Architects (RIBA) (2022), regular site meetings and progress reports can help improve communication and prevent disputes.

Effective communication and collaboration are essential for improving labour management practices and enhancing project delivery in the construction industry. As noted by Shin *et al.* (2020), poor communication among project stakeholders can lead to misunderstandings, conflicts, and delays. Employers should promote open communication channels, establish regular meetings, and utilize project management software to facilitate collaboration among team members. According to research by Li *et al.* (2021), collaboration and communication were found to be essential in improving project outcomes, reducing waste, and increasing efficiency. Similarly, a study by Zhao*et al.* (2020) shows that effective communication and collaboration can help improve safety and reduce accidents on construction sites. Improved communication is crucial for creating a productive work environment. According to Semiu*et al.* (2022) open communication of information, ideas, and grievances is necessary for employees to understand their roles and responsibilities and work towards achieving company objectives. Additionally, employees must be informed of decisions, plans, and policies that affect the organisation and individuals.

2.7.12 Encourage diversity and inclusion

Diversity and inclusion can improve labour management practices and construction project delivery. Diversity and inclusion can improve employee engagement, reduce turnover rates, and improve project outcomes. Employers should create a diverse and inclusive work environment, provide equal opportunities for all employees, and address any discrimination or bias in the workplace (Weber *et al.*, 2021).

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Design

Descriptive survey research was used for the study. Discovering the what, where, and how of a phenomenon is the goal of a descriptive study (Creswell, 2012). This research design was selected because it allowed for efficient and quick data collection from a bigger population. It enables one to gather numerical data that can then be quantitatively analysed using both descriptive and inferential statistics. Hence, a quantitative research approached was adopted for this study.

3.2 Research Population

The population is the whole group of individuals whose attributes are to be estimated (Wimmer*et al.*, 2016). In other words, population is a set of all the units which possess variable characteristic under study and for which findings of research can be generalized. A sample size can be defined as a group of relatively smaller number of people selected from a population for investigation purpose (Alvi, 2016). The process through which a sample size is extracted from a population is called as sampling (Alvi, 2016). The members of the sample are called as participants. Sample size is used to fairly represent the target population. It is said to be representative when the characteristics of elements selected are similar to that of entire target population. The more the sample is representative of the target population, the higher is the accuracy of the inferences and better are the results generalizable (Alvi, 2016). There are different formulae that can be used for the determination of appropriate sample sizes. The researchers should choose the formula according to their needs and convenience(Shukla, 2020). Thus, the population for the study consisted of 109

construction firms that were registered with Ministry of Works and Corporate Affairs Commission in Abuja.

3.3 Sampling Frame/Size

According to Kothari (2004), a sample frame/size is a list containing sampling units to be considered for a sampling process. It is a basic unit of samples/sizes drawn from the population; the sample frame/size is not always the same but represents the population. Therefore, the various registered construction companies and their addresses were obtained from Corporate Affairs Commission, Finelib, and Business Directory in Abuja. A total of 109 construction companies found from these sources formed the sample frame/size for this study.

3.4 Sampling Technique

According to Rahi (2017), sampling techniques in research are a process of picking elements included in the study population. Sampling is the assortment of a subgroup of persons from a population to provide population knowledge for statistical inferences (Black & William, 2004). It can be purposive or non-purposive. Whichever the case may be, a good population sample should be genuinely representative, leading to a small sampling error, extending to a universe with a reasonable degree of trust (Kothari, 2004).A good sample is a statistical representation of the population of interest and is large enough to answer the research question (Alvi, 2016). A method used to select a sample is called sampling method. There are different techniques that a researcher can use to obtain a representative sample from the population of interest, and the techniques depends on the characteristics of the population of interest, the desired power and significance level and the research question (Majid, 2018). Sampling methods are broadly categorized into two major types which are probability and non-probability sampling (Alvi, 2016). A non-probability sampling is a method of sample

selection that does not have any scientific basis, so it increases the chances of selecting biased sample in most of the cases, such sample does not represent all characteristics of entire population while a probability sampling method, is a method in which subjects are selected without any bias or prejudice and in which all the units of population have equal or predetermined and certain probability to be selected in a sample (Shukla, 2020).

Non probability sampling is also termed as judgment or non-random sampling. In non-probability samples, you do not have to determine the sample size in advance and have limited knowledge about the population from which the sample is taken (Neuman, 2013). Non probability techniques make it possible to take a sample of population the elements of which are infinite in number (Alvi, 2016). The different types of non-probability sampling techniques are convenience sampling, purposive sampling, quota sampling; and snowballing sampling. The non-probability sampling method was adopted for this study with the use of purposive sampling technique. The purposive were taken from the study area, the unit of analysis are the selected 109 construction firms in Abuja, hence each questionnaire survey were administered one per firms.

3.5 Data Collection Instruments

Accurate and systematic data collection is critical to conducting scientific research. Datacollection allow us to collect information that we want to collect about our study. Datacollection is the process of gathering and measuring information on variables of interest,in an established systematic fashion that enables one to answer stated research questions,test hypotheses, and evaluate outcomes (Kabir, 2016). The goal for all data collection isto capture quality evidence that translates to rich data analysis and allows the building ofa convincing and credible answer to questions that have been posed (Mazhar *et al.,* 2021). Data collection instrument include: secondary and primary

source of data (Kabir, 2016).Hence, in accordance with the objectives of thestudy and the available time, the study utilized self-administered questionnaires as theprimary instrument for collecting data. This approach facilitated the efficient collection of data within a short period (Hajizadeh*et al.,* 2021).

3.6 Procedure for Data Collection

Questionnaires are resourceful data collection instruments that give the researcher the ability to understand what is needed and analysed the information's obtained. It is easier to distribute and to analyse. The use of questionnaire is useful and they increase the independence and accuracy of respondents' responses while simultaneously covering a broad population quickly and at a low cost to the researcher (Sekaran& Bougie, 2013). All the questionnaires were self-administered to the various construction firms in Abuja. The questionnaires were formulated according to the study objectives. The questions designed for this research were structured in two sections. Section A dwelled on the participants' background information, while the other section focused on matters relating to the research study. Questions in the structured questionnaire were on a five-point Likert scale for ease and uniformity of response.

3.7 Methods of Data Presentation and Analysis

Tables were employed in this study for data presentation. The collected data were analysed using descriptive and inference statistics such as percentile, means, and spearman correlation, and linear regression analysis using Microsoft Excel, and scientific package for social sciences (SPSS) version 21

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Data Presentation

This chapter presents the outcomes of the quantitative study conducted with the use of a well-structured questionnaire. Total of one hundred and nine (109) questionnaires were distributed to the construction firms which took part in the questionnaire survey. The distributed one hundred and nine (109) questionnaires were returned which were used for the analysis. The first section dwelt on the demographic information of the respondents and firms, while the other sections are organised according to the study objectives.

4.2 Background of the Respondents

Due to the nature of the study, certain skilled, informed construction professionals with extensive experience at various management, and administrative levels were required to reply to the questionnaires in order to obtain the data required to meet the study's objectives. The results for each of the seven variables are presented in detail in Table 4.1 below.Regarding years of experience, Table 4.1 showed the highest percentage of respondents (34.9%) have between 11-15yrs years of experience, followed by (31.2%) of respondents with greater than 16years of experience. These revealed that therespondents could be considered valid to provide answers to the questionnaires.On the organisation’s years of practice, Table 4.1 showed the highest percentage of firms (42.2%) with 16-20years of practice, followed by (18.3%) of firms with more than 20yearspractice. These revealed that most construction firms understand human resources management practices.

Also, it showed that many respondents had at least a BSc/BTech degree in relevant fields (56.0%), followed by (28.4%) of the respondent with PGD/Masters’ in relevant

fields. This implies that these categories of respondents knew the various LMP discussed. On the professional affiliations, Table 4.1 showed the professional background of the respondents: 44.0% were Builders, 22.9% were Engineers, 17.4% were Quantity surveyors, and 15.6% were Architects. Also, it further revealed the organisational workforce of the construction firms, 50.5% have the highest workforce of 200 and above, followed by 25.7% with less than 200 workforces. This implies that most construction firms are classified as large enterprises. Table 4.1 showed the organisation categories, the highest firms are the contracting firms with 53.2%, followed by consulting firms 44.0%. Also, 58.7% of the construction firms undertake both building and civil engineering works, followed by 30.3% and 11.0% for firms that undertake only civil engineering and building works.

Table 4.1: Demographic Profiles of the Respondents

	Frequency	Percentage	Cumulative
Year of experience			
1-5yrs	3	2.8	2.8
6-10yrs	13	11.9	14.7
11-15yrs	38	34.9	49.5
16-20yrs	34	31.2	80.7
more than 20yrs	21	19.3	100.0
Organisation year of practice			
1-5yrs	10	9.2	9.2
6-10yrs	17	15.6	24.8
11-15yrs	46	14.7	67.0
16-20yrs	20	42.2	85.3
more than 20yrs	16	18.3	100.0
Qualification of respondent			
HND	11	10.1	10.1
BSC/B.Tech	61	56.0	66.1
PGD/Masters'	31	28.4	94.5
PhD	5	4.6	99.1
Others	1	0.9	100.0
Professional affiliations			
Architecture	17	15.6	15.6
Building	48	44.0	59.6
Engineering	25	22.9	82.6
Quantity surveyors	19	17.4	100.0
Organisationworkforce			
10 – 49	26	23.9	23.9
50 – 199	28	25.7	49.5
200 and above	55	50.5	100.0
Type of organisation			
Government	2	1.8	1.8
Consulting	48	44.0	45.9
Contracting	58	53.2	99.1
Others	1	0.9	100.0
Nature of work undertaken			
Building works	12	11.0	11.0
Civil engineering works	33	30.3	41.3
Both civil and building	64	58.7	100.0

4.3 Labour Management Practices Commonly Used in the Construction Firms

The objectives one was to assess the labour management practices that are commonly used in the construction firms in Abuja. From the results of literature review, various labour management practices were identified and clustered into seven (7) primary variables (workforce planning, recruitment/selection, training/development, performance management, health/safety, compensation/benefits, and labour relations).Five sub-variables under each of the seven significant variables were identified. Analysis were done at two different levels. First, the mean score for each of the sub-variables under the seven (7) grouped major variables was calculated and ranked. Second, the summary mean score for each of the seven (7) grouped variables was calculated and ranked to show the extent of each of their usage.

Table 4.2 showed the extent of the use of workforce planning practices in construction organisational firms. Total of four (4) workforce planning practices were identified, analysed and ranked. The two (2) most frequently high used workforce planning practices in the construction firms are developing a staffing plan (3.84), and succession planning (3.40). Developing a staffing plan; identifying the number of workers required and their roles are an essential component of effective workforce planning (Baldwin *et al*., 2014). Also, Fellows *et al*. (2013) highlighted the importance of succession planning for construction project delivery success. In contrast, the two (2) slightly used workforce planning practices in the construction firms are forecasting labour (3.02), and assessing labour supply (2.98).

Table 4.2: Workforce Planning Practices Commonly Used in the Construction Firms

Workforce Planning	Mean	Std. D	Rank
Develop a staffing plan	3.84	.964	1
Succession planning	3.40	1.037	2
Forecasting labour	3.02	1.225	3
Assessing labour supply	2.98	1.269	4

Table 4.3 showed the extent of the use of recruitment and selection practices in construction organisational firms. Total of five (5) recruitment/selection practices were identified, analysed and ranked. The three (3) most frequently high recruitment/selection practices in the construction firms are job analysis (3.85), job posting and advertisement (3.62) and job screening (3.52).Identifying specific skills, experience, and qualification needed for the job is considered as important in the Nigeria construction industry for effective recruitment and selection of skilled labour. According to Odeyinka and Yusuf (2020), most organisations relied on personal connections to recruit and select employees, rather than formal recruitment processes. In contrast, the two (2) slightly used recruitment/selection practices in the construction firms are conducting in-person interview (2.95), and selection and hiring (2.33).

Table 4.3: Recruitment and Selection Practices Commonly Used in the Construction Firms

Recruitment and Selection	Mean	Std. D	Rank
Job analysis	3.85	1.017	1
Job posting and advertisement	3.62	1.223	2
Job screening	3.52	1.127	3
Conducting in-person interviews	2.95	1.235	4
Selection and hiring	2.33	1.147	5

Table 4.4 showed the extent of the use of training and development practices in construction organisational firms. Total of five (5) training and development practices were identified, analysed and ranked. The three (3) most frequently high training and development practices in the construction firms are technical training (3.40), safety training (3.15), and continuing education and development (3.02).According to Odeyinka *et al*. (2019), technical training is an essential training practice in the Nigeria construction industry as it ensures that workers are equipped with the necessary skills and knowledge to carry out their tasks effectively. The study also found that safety training is important to minimize the number of accidents and injuries on construction sites. Similarly, continuing education and professional development are necessary to keep workers updated on the latest construction techniques and technologies, which can improve their productivity and overall job performance thereby leading to project success. Moreover, soft skills training is also crucial in the construction industry, as it helps workers to develop interpersonal skills, such as communication, teamwork, and leadership. According to a study by Oladapo *et al.* (2020), soft skills training is essential to enhance workers' overall performance and productivity on construction sites. However, the findings suggest that leadership training is not commonly used in

the Nigeria construction industry. This may be due to the belief that leadership skills are innate rather than trainable. According to a study by Adenuga *et al.* (2021), leadership training is often neglected in the Nigeria construction industry, despite its potential to improve the overall project delivery success. In contrast, the two (2) slightly used training and development practices in the construction firms are soft skills (2.71), and leadership training (2.58).

Table 4.4: Training and Development Practices Commonly Used in the Construction Firms

Training and Development	Mean	Std. D	Rank
Technical training	3.40	1.172	1
Safety training	3.15	1.201	2
Continuing education/development	3.02	1.071	3
Soft skills	2.71	1.165	4
Leadership training	2.58	1.149	5

Table 4.5 showed the extent of the use of performance management practices in construction organisational firms. Total of five (5) performance practices were identified, analysed and ranked. The three (3) most frequently high performance practices in the construction firms are performance improvement (3.21), setting performance (2.98), and performance evaluation (2.50). According to Ameh and Daniel (2017), there is need for construction organisations in Nigeria to adopt a more holistic approach to performance management, one that focuses on continuous improvement and employee development. Overall, the results suggest that there is room for improvement in the performance management practices of the Nigerian construction industry, particularly in the area of recognition and rewards. Organisations should consider adopting a more comprehensive and employee-centric approach to

performance management to improve employee motivation and productivity for effective project delivery. In contrast, the two (2) slightly used performance management practices in the construction firms are performance monitoring (2.27), and recognition and reward (2.06).

Table 4.5: Performance ManagementPractices Commonly Used in the Construction Firms

Performance Management	Mean	Std. D	Rank
Performance improvement	3.21	1587	1
Setting performance	2.98	1.581	2
Performance evaluation	2.50	1.457	3
Performance monitoring	2.27	1.418	4
Recognition and reward	2.06	1.216	5

Table 4.6 showed the extent of the use of health and safety practices in construction organisational firms. Total of five (5) health and safety practices were identified, analysed and ranked. The three (3) most frequently high health and safety practices in the construction firms are implementation of safety procedure (3.47), hazard identification (3.39), and personal protective equipment (3.26). The findings are in line with Ogunsanmi *et al*. (2021) and Akanbi and Aderonmu (2016) who revealed that hazard identification and risk assessment and implementation of safety procedures and safety inspections and audits were the most commonly used practices. In contrast, the two (2) slightly used health and safety practices in the construction firms are safety inspection (3.11), and emergency preparedness (3.06).

Table 4.6: Health and SafetyPractices Commonly Used in the Construction Firms

Health and Safety	Mean	Std. D	Rank
Implementation of safety procedure	3.47	1.085	1
Hazard identification	3.39	.991	2
Personal protective equipment	3.26	1.220	3
Safety inspection	3.11	1.066	4
Emergency preparedness	3.06	1.223	5

Table 4.7 showed the extent of the use of compensation and benefits practices in construction organisational firms. Total of five (5) compensation and benefits practices were identified, analysed and ranked. The three (3) most frequently high compensation and benefits practices in the construction firms are base salary (3.28), overtime pay (3.18), and performance-based pay (3.12). The findings are in line with Ogunsanmi*et al*. (2021) and Akanbi and Aderonmu (2016) who revealed that hazard identification and risk assessment and implementation of safety procedures and safety inspections and audits were the most commonly used practices. In contrast, the two (2) slightly used compensation and benefits practices in the construction firms are health insurance (3.09), and retirement benefits (2.95).

Table 4.7: Compensation and Benefits Practices Commonly Used in the Construction Firms

Compensation and Benefits	Mean	Std. D	Rank
Base salary	3.28	.914	1
Overtime pay	3.18	1.073	2
Performance-based pay	3.12	1.034	3
Health insurance	3.09	1.102	4
Retirement benefits	2.95	.966	5

Table 4.8 showed the extent of the use of labour relations practices in construction organisational firms. Total of five (5) labour relations practices were identified, analysed and ranked. The three (3) most frequently high labour relations practices in the construction firms arecollective bargaining (3.27), grievance resolution (2.98), and labour-management committees (2.61). The findings are in line with Oyeyinka*et al.* (2018) whohighlighted the importance of collective bargaining in the construction industry. Collective bargaining allows for the negotiation of wages and working conditions between management and labour unions, and can help to prevent disputes and strikes. The grievance resolution provides employees the formal process of raising concerns or complaints, and addressing these issues in a timely and effective manner. The grievance resolution helps to reduce employee dissatisfaction and turnover in the construction industry (Odeyinka&Yusif, 2021).Labour management committees are typically composed of representatives from management and labour unions, and are designed to facilitate communication and collaboration between the two groups. (Budd *et al.,* 2010). In contrast, the two (2) slightly used labour relations practices in the construction firms are employee involvement (2.61), and labour laws and regulations (2.55).

Table 4.8: Labour Relations Practices Commonly Used in the Construction Firms

Labour Relations	Mean	Std. D	Rank
Collective bargaining	3.27	1.274	1
Grievance resolution	2.98	1.209	2
Labour-management committees	2.61	1.240	3
Employee involvement	2.61	1.130	4
Labour laws and regulations	2.55	1.251	5

Also, as presented in Table 4.9 are the summary mean score and standard deviation of the seven (7)labour management practices major variables and their extent of usage. The three (3) most frequently high used labour management practices in the construction firms are workforce planning (4.08), training and development (3.98), health and safety (3.94) and recruitment and selection (3.94).In contrast, the three (3) slightly used labour management practices in the construction firms are performance management (3.82), labour relations (3.72), and compensation and benefits (3.66).

Table 4.9: Summary of LMP Major Variables Commonly Used in the Construction Firms

Labour Management Practices	Mean	Std. D	Rank	Decision
Workforce planning	4.08	.747	1	MCU
Training/development	3.98	.805	2	MCU
Health/safety	3.94	.724	3	CU
Recruitment/selection	3.94	.650	4	CU
Performance management	3.82	.709	5	NCU
Labour relations	3.72	.912	6	NCU
Compensation/benefits	3.66	.670	7	NCU

Note: MCU = most commonly used, CU = commonly used and NCU = not commonly used

4.4 Factors Influencing the Effectiveness of Labour Management Practices of Construction Firms

The objectives two (2) which is to determine the factors influencing the effectiveness of LMP of construction firmsin Abuja. Various factors influencing labour management practices were identified and clustered into thirteen (13) primary variables (technology, environmental, productivity, training/development, employer-employee relationship, health/safety, motivation, communication, workforce planning, organisational, financial, supervision, and external factors). Five sub-variables under each of the thirteen significant variables were identified. Analyses were done at two different levels. First, the mean score for each of the sub-variables under the thirteen (13) grouped major variables was calculated and ranked. Second, the summary mean score for each of the thirteen (13) grouped variables was calculated and ranked to show the level of each of their influence.

Table 4.10 showed the technology factors influencing LMP of construction organisational firms in Abuja. Total of five (5) technology factors were identified, analysed and ranked. The three (3)high influencing factors of technology are tools and equipment (4.03), choosing new technology (3.83), and conducting knowledgeable programmes (3.53). This indicates that the availability and proper use of tools and equipment and adopting new technology are crucial for the effective management of labour and project delivery in the Nigerian construction industry. According to Aina and Olalekan (2021), adopting new technologies in the construction industry will improve project delivery thereby leading to overall project performance of the industry.Incontrast, the two (2) low technological factors influencing LMP areLess use of technology(3.31), and Equipment non availability (2.88).

Table 4.10: Technology Factors

Technology Factors	Mean	Std. D	Rank
Tools and equipment	4.03	.833	1
Choosing new technology	3.83	1.183	2
Conducting knowledgeable programmes	3.53	1.266	3
Less use of technology	3.31	1.215	4
Equipment non availability	2.88	1.112	5

Table 4.11 showed the environmental factors influencing LMP of construction organisational firms in Abuja. Total of five (5) environmental factors were identified, analysed and ranked. The three (3) high environmental factors arehuman resources management and financial performance (4.02), provision of friendly environment(3.85), and ambient noise conditions (2.97). Human resource management and financial performance are very important for effective project delivery

(Olawale & Sun, 2021). Environmental factors such inadequate safety measures, poor working conditions, and lack of training and development opportunities for worker can negatively influence project delivery and performance of the construction industry (Akinola *et al*., 2020). In contrast, the two (2) low environmental factors influencing LMP are local weather patterns on site (2.96), and hazardous work area (2.71).

Table 4.11: Environmental Factors

Environmental Factors	Mean	Std. D	Rank
Human resources management and financial performance	4.02	1.036	1
Provision of friendly environment	3.85	1.061	2
Ambient noise conditions	2.97	1.343	3
Local weather patterns on site	2.96	1.347	4
Hazardous work area	2.71	1.065	5

Table 4.12 showed the productivity factors influencing LMP of construction organisational firms in Abuja. Total of five (5) productivity factors were identified, analysed and ranked. The three (3) high productivity factors are technical knowledge (3.83), poor productivity (3.58), and communication issues (3.45). Workers dissatisfaction at work typically results in poor productivity, which causes unemployment and inflation, a decline in the standard of living for workers, high labour turnover, low morale, industrial conflicts, strikes, and alienation from the workplace; therefore, all hands must be on deck in search of ways to increase productivity and thereby strengthen the economy for the benefit of all parties in employment relations (Chimezie*et al*., 2021). In contrast, the two (2) low productivity factors influencing LMP are poor selection of employees (3.22), and wrong selection of employees (2.97).

Table 4.12: Productivity Factors

Productivity Factors	Mean	Std. D	Rank
Technical knowledge	3.83	.989	1
Poor productivity	3.58	1.204	2
Communication issues	3.45	1.093	3
Poor selection of employees	3.22	1.235	4
Wrong selection of employees	2.97	1.067	5

Table 4.13 showed the training and development factors influencing LMP of construction organisational firms in Abuja. Total of five (5) training and development factors were identified, analysed and ranked. The three (3) high training and development factors are apprentices and site supervisor's training/development (4.53), skilled workers training/ development (4.39), and cross-utilisation and cross-training (3.91). This outcome revealed the how training and development programmes for apprentices and site supervisors are crucial for improving project delivery and performance of the construction industry in Nigeria. Training programmes can increase workers safety awareness and reduce the cases of accidents on construction sites (Oyewobi*et al*., 2016).Providing skilled training and development opportunities to workers in the construction industry will have an influence on project delivery. In contrast, the two (2) low productivity factors influencing LMP are unqualified training for labours (3.70), and technical training and development (3.22).

Table 4.13: Training and Development Factors

Training and Development Factors	Mean	Std. D	Rank
Apprentices and site supervisors training/development	4.53	.661	1
Skilled workers training/ development	4.39	.870	2
Cross-utilisation and cross-training	3.91	.938	3
Unqualified training for labours	3.70	1.118	4
Technical training and development	3.22	1.279	5

Table 4.14 showed the employer-employee relationship factors influencing LMP of construction organisational firms in Abuja. Total of five (5) employer-employee relationship factors were identified, analysed and ranked. The three (3) high employer-employee relationship factors are competency of labour supervision (3.52), participation in decision making (3.45), and periodic meetings with labour (3.02).According to Amusan*et al*. (2021) the relationship between employers and employees significantly influence labour output and reduces absenteeism, thereby enhancing project delivery success in the construction industry. In contrast, the two (2) low employer-employee relationship factors influencing LMP are dispute between employee and employer (3.01), and labour absenteeism (2.73).

Table 4.14: Employer-Employee Relationship Factors

Employer-Employees Relationship	Mean	Std. D	Rank
Competency of labour supervision	3.52	1.317	1
Participation in decision making	3.45	1.337	2
Periodic meetings with labour	3.02	1.202	3
Dispute between employee and employer	3.01	1.198	4
Labour absenteeism	2.73	1.392	5

Table 4.15 showed the health and safety factors influencing LMP of construction organisational firms in Abuja. Total of five (5) health and safety factors were identified, analysed and ranked. The three (3) high health and safety factors are labour safety behaviour (2.85), health care and social assistance (2.84), and health insurance (2.67). This implies that labour safety behaviour is important for labour management practices and project delivery in the Nigeria construction industry. Improving safety behaviour and culture will significantly reduce construction accident and enhance project delivery (Zhao*et al*., 2020). In contrast, the two (2) low health and safety factors influencing LMP are insurance for injury workers at workplace (2.57), and labour injuries during construction (2.50).

Table 4.15: Health and Safety Factors

Health and Safety Factors	Mean	Std. D	Rank
Labour safety behaviour	2.85	1.393	1
Health care and social assistance	2.84	1.164	2
Health insurance	2.67	1.240	3
Insurance for injury workers at workplace	2.57	1.343	4
Labour injuries during construction	2.50	.919	5

Table 4.16 showed the motivation factors influencing LMP of construction organisational firms in Abuja. Total of five (5) motivation factors were identified, analysed and ranked. The three (3) high motivation factors are lack of motivation (4.41), lack of incentive programmes (4.39), and lack of welfare (4.20).This suggested that improving the motivation and attitude of the workforce is extremely effective for enhancing labour management practices in the construction industry. Lack of motivation is a challenge which usually affected good labour management practices (Kangari& Mirzaei, 2018). In contrast, the two (2) low motivation factors influencing LMP are workplace atmosphere (3.29), and work-life balance (2.98).

Table 4.16: Motivation Factors

Motivation Factors	Mean	Std. D	Rank
Lack of motivation	4.41	.830	1
Lack of incentive programmes	4.39	.933	2
Lack of welfare	4.20	1.016	3
Workplace atmosphere	3.29	1.030	4
Work-life balance	2.98	1.122	5

Table 4.17 showed the communication factors influencing LMP of construction organisational firms in Abuja. Total of five (5) communication factors were identified, analysed and ranked. The three (3) high communication factors are poor communication (3.39), lack of good relationship between labour-superintendents (2.88), and lack of information sharing (2.83). This indicated that effective communication channels are crucial for labour management practices. Alnuaimi*et al*. (2018) emphasized the important of good relationships between labour and superintendents for effective communication and good labour management practices. In contrast, the two (2) low communication factors influencing LMP are poor project management (2.81), and delay in project completion (2.80).

Table 4.17: Communication Factors

Communication Factors	Mean	Std. D	Rank
Poor communication	3.39	1.232	1
Lack of good relationship between labour-superintendents	2.88	1.120	2
Lack of information sharing	2.83	1.246	3
Poor project management	2.81	1.101	4
Delay in project completion	2.80	1.087	5

Table 4.18 showed the workforce planning factors influencing LMP of construction organisational firms in Abuja. Total of five (5) workforce planning factors were identified, analysed and ranked. The three (3) high workforce planning factors are inexperienced workforce (4.28). inadequate work scheduling (3.79), and inadequate planning (3.77). These findings are consistent with previous research on workforce planning factors in the construction industry which revealed that the shortage of skilled labour and inadequate workforce planning negatively impacted project delivery in the

construction industry. Similarly, a study by Kaming*et al.* (2015) identified inadequate workforce planning and scheduling as major factors that affect construction productivity. Additionally, a study by Aibinu and Jagboro (2002) showed that the inexperience of construction workers led to poor work quality and project delays. In contrast, the two (2) low workforce planning factors influencing LMP are shortage of workforce (3.72), and using part-time workforce (3.61).

Table 4.18: Workforce Planning Factors

Workforce Planning Factors	Mean	Std. D	Rank
Inexperienced workforce	4.28	2.960	1
Inadequate work scheduling	3.79	1.055	2
Inadequate planning	3.77	1.136	3
Shortage of workforce	3.72	1.028	4
Using part-time workforce	3.61	1.283	5

Table 4.19 showed the organisational factors influencing LMP of construction organisational firms in Abuja. Total of five (5) organisational factors were identified, analysed and ranked. The three (3) high organisational factors are satisfaction at work (2.89), cultural differences (2.80), and economic conditions (2.79). These findings are consistent with previous research that emphasizes the importance of worker satisfaction and motivation in the construction industry (Odeyinka*et al*., 2016). In contrast, the two (2) low organisational factors influencing LMP are increase of labour age (2.73), and workers participation (2.63).

Table 4.19: Organisational Factors

Organisational Factors	Mean	Std. D	Rank
Satisfaction at work	2.89	1.242	1
Cultural differences	2.80	1.137	2
Economic conditions	2.79	1.147	3
Increase of labour age	2.73	1.144	4
Workers participation	2.63	1.119	5

Table 4.20 showed the financial factors influencing LMP of construction organisational firms in Abuja. Total of five (5) financial factors were identified, analysed and ranked. The three (3) high financial factors are material and equipment cost (4.27), cash flow of project (3.17), and project design cost (2.75). This finding is in line with a study by Oke, *et al.* (2020), which reported that the cost of materials and equipment is a significant factor in the Nigerian construction industry's project delivery. Cash flow management is one of the critical challenges facing contractors in Nigeria construction industry (Ogunsanmi&Ogunsemi, 2019). In contrast, the two (2) low financial factors influencing LMP are profit rate of project (2.69), and overhead percentage of project (2.66).

Table 4.20: Financial Factors

Financial Factors	Mean	Std. D	Rank
Material and equipment cost	4.27	1.068	1
Cash flow of project	3.17	1.253	2
Project design cost	2.75	1.047	3
Profit rate of project	2.69	1.260	4
Overhead percentage of project	2.66	1.148	5

Table 4.21 showed the supervision factors influencing LMP of construction organisational firms in Abuja. Total of five (5) supervision factors were identified, analysed and ranked. The three (3) high supervision factors are lack of monitoring performance (3.77), poor supervision of labour (3.59), and subcontractors' performance (3.17). This is in line with previous research that revealed the importance of monitoring and control in the construction industry, particularly in ensuring that projects are delivered on time and within budget (Adelowo*et al.*, 2018). According to Ihuah and Umeokafor (2018), poor supervision is a major factor contributing to project delays and cost overruns in the construction industry. In contrast, the two (2) low supervision factors influencing LMP are decision during development stage (3.12), and defective work (3.10).

Table 4.21: Supervision Factors

Supervision Factors	Mean	Std. D	Rank
Lack of monitoring performance	3.77	1.310	1
Poor supervision of labour	3.59	1.396	2
Subcontractors performance	3.17	1.239	3
Decision during development stage	3.12	1.296	4
Defective work	3.10	1.347	5

Table 4.22 showed the external factors influencing LMP of construction organisational firms in Abuja. Total of four (4) external factors were identified, analysed and ranked. The two (2) high external factors are weather and season changes (3.17), and Government policy (3.06).The results suggested that external factors play a significant role in the effectiveness of labour management practices and project delivery in the Nigerian construction industry. Several recent research works have explored some of these factors and their impact on the industry.Ajayi and Oyeyipo (2020) revealed that extreme weather events such as heavy rainfall, high wind speed, and extreme temperatures have a significant impact on construction project performance. The study recommended that contractors should develop weather contingency plans to mitigate the impact of weather events. In a related development, Oke and Ogunsemi (2019) revealed that government policies have a significant impact on the industry, particularly in terms of project financing, regulatory compliance, and contract procurement. In contrast, the two (2) low external factors influencing LMP are cultural conditions and customs of community at the project site (3.04), and conflict project stakeholders (3.03).

Table 4.22: External Factors

External Factors	Mean	Std. D	Rank
Weather and season changes	3.17	1.221	1
Government policy	3.06	1.201	2
Cultural conditions and customs of community at the project site	3.04	1.201	3
Conflict project stakeholders	3.03	1.093	4

Also, as presented in Table 4.23, are the mean score and standard deviation of the thirteen (13) major variables of factors influencing labour management practices in construction firms. The five critical high factors influencing labour management practices in the construction firms are technology (4.20), productivity (4.13), training and development (4.01), motivation (3.99), and workforce planning (3.95).These are consistent with Douglas *et al*. (2018), Ayodeji *et al*. (2023), and Ihedigbo*et al*. (2023) who revealed that technology, productivity, training/development, motivation and workforce planning and training/development have influence overproject delivery success. According Mohammed *et al*. (2018) safety training improved the skills, knowledge, and safety culture of construction workers, which leads to increase in productivity thereby enhancing the overall project delivery and performance. In a related development, Baiden*et al*. (2016) revealed that performance monitoring and feedback is effective for improving project delivery. In contrast, the five low factors influencing labour management practices are organisational (3.83), health and safety (3.81), supervision (3.68), environmental (3.66), and external (3.61).

Table 4.23: Summary of Major Variables of Factors Influencing LMP of the Construction Firms

Factors Influencing LMP	Mean	Std. D	Rank	Decision
Technology	4.20	.814	1	HIF
Productivity	4.13	.934	2	HIF
Training and development	4.01	.844	3	HIF
Motivation	3.99	.751	4	HIF
Workforce planning	3.95	.809	5	HIF
Financial	3.94	1.048	6	MIF
Communication	3.92	.904	7	MIF
Employer-employee relationship	3.89	.854	8	MIF
Organisational	3.83	.941	9	LIF
Health and safety	3.81	1.126	10	LIF
Supervision	3.68	.744	11	LIF
Environmental	3.66	.945	12	LIF
External	3.61	.962	13	LIF

Note: HIF = high influencing factors, MIF = moderate influencing factors and LIF = low influencing factors

4.5 Project Delivery(Critical Success Factors) of Construction Firms

For objective three (3) which is to assess the project delivery (critical success factors) of construction firms in Abuja. Table 4.24 showed the mean score and standard deviation of the fifteen most critical success factors of project delivery major variables. The five most critical success factors of project delivery in the construction firms are realistic time estimate (3.93), realistic cost estimate (3.84), client involvement (3.83), quality (3.79), and project planning (3.74). Delivery of project in time is one of the

determinants for project success. Hence, any delay will reflect on project delivery (Mahamid, 2016). According to Oyewobi*et al*. (2016) and Ihedigbo*et al*. (2022) variations during construction are time consuming because the increase construction time by 29.5%. During the planning stage, an accurate bill of quantities and accuracy of the preliminary cost estimate is important to indicate the value for project funding, which avoids the project as additional costs (Albtoush *et al*., 2022). Quality is one of the main criteria that determine the success of a project. However, due to the enormity of the construction projects, projectface some reasons that lead to not achieving quality. These reasons are works not conformance to codes and standards, damage caused by adverse weather conditions during implementation of the projects, and use of substandard materials. (Albtoush *et al*., 2022). According Babu (2015), client involvement and consultation in the project delivery is important to project success. For a successful project, client must be strongly committed to the project goals and be involved in the project management process. In contrast, the five less critical success factorsof project delivery in the construction firms are adequate project control (3.36), understanding of project (3.25), stakeholders' involvement (3.24), competent project team (3.10) and external factors (3.09).

Table 4.24: Project Delivery(Critical Success Factors) of Construction Firms

Critical success factors	Mean	Std. D	Rank
Realistic time estimate	3.93	.959	1
Realistic cost estimate	3.84	1.132	2
Client involvement	3.83	1.104	3
Quality	3.79	1.081	4
Project planning	3.74	985	5
Availability of resources	3.56	1.150	6
Authority of the project managers	3.51	1.111	7
Top management support	3.50	1.094	8
Effective communication	3.45	1.258	9
Adequate project control	3.36	1.444	10
Understanding of project	3.25	1.341	11
Stakeholders involvement	3.24	1.459	12
Competent project team	3.10	.1.088	13
External factors	3.09	.727	1

4.6 Relationship Between Labour Management Practices and Project Delivery (Critical Success Factors) of Construction Firms

The objective four is to determine whether labour management practices (independent) variables have relationship with project delivery (critical success factors) dependent variables. The result in Table 4.25showed that there is positive significant relationship between labour management practices and project delivery(rho = .391; n = 109; P <.000). These denote a direct and perfect relationship measuring it on Cohen (1988) and Pallant (2011) criteria. These criteria which asserted thata correlation of 0 means no relationship, 1.0 means a perfect positive correlation, and a value of –1.0 means a

perfect negative correlation. These are consistent with Yu and Lee(2002),Li and Chen (2019), Ahmed *et al*. (2018), Agumba and Mbachu (2018) who revealed that there is a link between labour management practices and project delivery. According to Mohammed *et al*. (2018) safety training improve the skills, knowledge, and safety culture of construction workers, which leads to increase in productivity thereby enhancing the overall project delivery and performance. In a related development, Baiden *et al*. (2016) revealed that performance monitoring and feedback is effective for improving project delivery.

Table 4.25: Relationship between Labour Management Practices and Project Delivery (Critical Success Factors) of Construction Firms

		Labour Management Practices	Project Delivery (CSF)
LabourManagement	Correlation Coefficient	1.000	.391**
	Sig. (2-tailed)		.000
	N	109	109
ProjectDelivery	Correlation Coefficient	.391**	1.000
	Sig. (2-tailed)	.000	
	N	109	109

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

Also, a linear regression analysis was carried out to determine the influence of labour management practices on project delivery (CSF). Also, to further examine the relationship between them.

Table 4.26 showed the results of the regression model. The model tested how labour management practices can predict project delivery. The model offers a predictive power of 14.30% (R = .384; R^2 = .147; F = 18.459 [with p = .000], with beta values (beta = .384). This outcome revealed that labour management practices had a positive

significant relationship/influence with project delivery. Thus, the regression model implied that labour management practices have a significant unique contribution to the model measuring it on Pallant (2011) criteria which stated that variables are making significant contributions to a prediction of dependent variables when the significant value is less than .05. But if the significant value is greater than .05, then, the variables are not contributing significantly to the prediction of the dependent variable. These, therefore, justified the correlation result.

Table 4.26: Regression Model Summary on the Relationship between Labour Management Practices and Project Delivery (Critical Success Factors of Construction Firms

	Project delivery (CSF)
Independent variables	
LMP	.384
R	.384
R2	.147
F	18.459
Sig	.000

4.7 Reliability of the Study

The study's variables were subjected to a reliability test using SPSS version 21. The results of the determination of the Cronbach's alpha values, which indicated the reliability of the scales, are shown in Table 3.1. The variables' Cronbach's alpha values are higher than the threshold point of 0.7. Cronbach's alpha was used to determine the internal consistency of the items and degree of covariance between the variables measuring each construct in the model(Chew *et al.*, 2008; Bamgbade, 2019).

Table 4.27: Reliability Values of the Scale

Item variables	Cronbach's Alpha V.	No of Items
LMP	.836	42
Influencing Factors	.874	64

4.8 Strategy for Improving Labour Management Practices for Effective Project Delivery in Construction Industry

To achieve the objective five. The most effective strategies for improving labour management practices based on the mean score, a benchmark of 3.50 was set. This same benchmark was set in (Olanrewaju *et al*., 2020; Ihedigbo*et al*., 2023) to assess the significant variables. Considering that, all the strategies were above 3.50,hence, all are considered significant. Furthermore, the significant variables were determined using the level of significance (p-value) of the data obtained from each of the variables. Thus, all the variables were established to be significant. Since all the identified strategies were found to be significant, it depicts that all the strategies will have significant influence towards improving labour management practices for enhancing project delivery. Also, the most top ranked strategies from the twelve (12) developed strategies are good wages policy, training and development, prioritizing safety, adoption of code of industrial relations practices, adequate compensation, and incentive and rewards. According to Oke*et al*. (2020) embracing technology such as building information modelling (BIM), drones, robots, and project management software can improve construction project delivery in Nigeria. Ogunsemi and Ogunsemi (2021) asserted that safety management practices can improve project performance and reduce safety-related risks in the Nigerian construction industry. Furthermore, Okolie and Ugwuoke (2021) stated that providing incentives and rewards can improve labour productivity and project performance in the Nigerian construction industry. In a related

development, Ayodeji and Oke (2021) revealed that training and development programmes can improve workers' skills, knowledge, and productivity in the Nigerian construction industry. According to Semiu*et al*. (2022) effective communication and collaboration can improve project delivery in the Nigerian construction industry. Promoting diversity and inclusion can improve labour management practices thereby leading to project delivery and overall performance of Nigerian construction industry (Eboh&Ugwuoke, 2021).

Table 4.28:Strategies for Improving LMP for Effective Project Delivery in the Construction Industry

Code	Effective Strategies for LMP	MIS	SD	t-value = 3.5			R
				T	Df	Sig	
STR1	Good wages policy	4.28	.768	10.535	108	.000	1
STR2	Training and development	4.18	.772	9.246	108	.000	2
STR3	Prioritizing safety	4.11	.762	8.361	108	.000	3
STR4	Adoption of code of industrial relations practice	4.07	1.095	5.469	108	.000	4
STR5	Adequate compensation	4.06	.936	8.288	108	.000	5
STR6	Incentive and rewards	4.06	.711	6.296	108	.000	6
STR7	Stable labour force	4.03	.855	6.443	108	.000	7
STR8	Encouraging diversity and inclusion	3.97	1.013	6.087	108	.000	8
STR9	Labour/trade unionism	3.97	.810	4.867	108	.000	9
STR10	Effective communication channels	3.95	1.040	4.560	108	.000	10
STR11	Healthy working environment	3.86	.833	4.542	108	.000	11
STR12	Embracing technology	3.83	.553	6.322	108	.000	12

Note; S-K = Skewness, K-S = Kurtosis, MIS= Mean Score, SD = Standard Deviation, df = Degrees of Freedom, Sig. Significance at 95% Level ($p < 0.005$), R = Rank

4.9 Summary of Findings

The following is the outcome of the analysis:

4.9.1 The extent of the use of labour management practices in construction firms in Abuja.

The results of the quantitative analysis showed that construction firms in Abuja frequently make use of labour management workforce planning (developing a staffing plan and succession planning) in carrying out their labour management planning; training and development (technical training, safety training, and continuing training) for their employees; health and safety (implementation of safety procedures, hazard identification, and personal protective equipment) at work; recruitment and selection (job analysis, job posting, and job screening) and performance management (performance improvement, setting performance, and performance evaluation.

4.9.2 Determining the factors influencing labour management practices of construction firms in Abuja.

The outcome of the quantitative analysis revealed that technology (tools and equipment, choosing new technology, and conducting knowledgeable programmes); productivity (technical knowledge, poor productivity, and communication issues); training and development (apprentices and site supervisors training and development, skilled workers training and development, and cross-utilisation and cross-training). When employees are not given the necessary training and developmental programmes, it reduces the level of their productivity, thereby leading to delay and poor performance of project delivery. Also, motivation (lack of motivation, lack of incentive programmes, and lack of welfare); workforce planning (inexperienced workforce, inadequate work scheduling, and inadequate planning); financial (material and equipment cost, cash flow of project, and project design cost) and employer-employee relationship (competency of labour supervision, participation in decision making, and periodic meetings with labour) are the major high factors influencing labour management practices of construction firms in Abuja.

4.9.3 Assessing project delivery critical success factors of construction firms in Abuja.

The findings indicated that critical success factors of project delivery such as realistic time estimate, realistic cost estimate, client involvement, quality, project planning, availability of resources, authority of the project managers, top management support, and effective communication are the most project delivery critical success factors of the construction firms in Abuja.

4.9.4 Determine the relationship between labour management practices and project delivery critical success factors of construction firms in Abuja.

The outcome of the Spearman correction and linear regression analysis indicated that the relationship between workforce planning, recruitment/selection, training/development, performance management and project delivery critical success factors is positive but not significant, while there is a positive significant relationship between health/safety, compensation/benefits, labour relations and project delivery critical success factors.

4.9.5 Effective strategy for improving labour management practices of construction firms in Abuja.

The findings showed that strategies such as good wages policy, training and development, prioritizing safety, adoption of code of industrial relations practices, adequate compensation, incentive and rewards, stable labour force, encouraging diversity and inclusion, labour and trade unionism, effective communication channels, healthy working environment, and embracing technology are all significant and effective for improving labour management practices based on the 3.50 benchmark, mean score, and significant (p-value).

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDTIONS

5.1 Conclusion

The study aimed to assess the influence of labour management practices on project delivery of construction firms with a view to improving project delivery in the construction industry in Nigeria. In order to achieve the aim of the study, the objectives were set to: assess the labour management practices that are commonly used in construction firms, determine the factors influencing the effectiveness of labour management practices of construction firms, assess the project delivery (critical success factors) of construction firms, determine the relationship between labour management practices and project delivery (critical success factors) and established strategies for improving labour management practices for effective project delivery. It concluded based on observation from examined literature and empirical results from the quantitative analysis. The study established that the factors influencing labour management practices of construction firms in Abuja are technology, productivity, training and development, motivation, workforce planning, financial, communication, and employer-employee relationship. The critical success factors of construction firms in Abuja such as realistic time estimate, realistic cost estimate, client involvement, quality, project planning, availability of resources, authority of the project managers, top management support, and effective communication are very important for effective project delivery. Hence, labour management practices such as compensation and benefits,labour relations, and health and safety influence project delivery of construction firms in Abuja. Therefore, leading to employee's satisfaction, effectiveness, performance, and participation. Strategies such as good wages policy,

training and development, prioritizing safety, adoption of code of industrial relations, adequate compensation, incentive and rewards and stable labour force improves labour management practices of construction firms in Abuja.

5.2 Recommendations

The study having revealed the various labour management practices, the influencing factors, and the effective strategies that will improve the construction project delivery, the following recommendation were made:

i. In order to overcome the challenges of labour turnover resulting from lack of training and development, compensation and benefits, incentive and rewards and reducing the low productivity of the employees in the construction industry, appropriate labour management practices and should be put in place in order to improve project delivery.

ii. There should be a good employer-employee relationship in order to give the employees a sense of belonging and confidence in their place of works. Employers and employees should create a good working and relationship between them so as to build trust and respect I order to improve retention and productivity thereby leading to overall project performance and success.

iii. Stakeholders in the construction industry should pay more attention to workforce planning, as it has been identified as a significant predictor of project delivery in the construction industry in Abuja. Adequate workforce planning can help ensure that there are enough skilled workers on a project, which can lead to improved project delivery.

iv. Organisations should prioritize effective management of factors such as communication conditions, cost, economic policy, financial factors, organisational factors, technology, training and development, and workforce

planning, as these factors have a positive relationship with project performance in the construction industry. This can be achieved through regular monitoring and evaluation of these factors to ensure that they are managed effectively.

v. Stakeholders should address the negative impact of factors such as construction documents, construction material, employer-employee relationship (labour productivity), environmental factors, external factors, health and safety, motivation, site access conditions, and supervision factors on project delivery. This can be achieved through the implementation of appropriate policies and measures to address these factors.

5.3 Contribution to Knowledge

The study contributed to knowledge in the following ways:

i. The research work makes a significant contribution to knowledge by providing a comprehensive overview of the labour management practices commonly used in the construction industry. The findings highlight the need for effective workforce planning, recruitment and selection, training and development, performance management, compensation and benefits, and labour relations practices to ensure project delivery success

ii. The study established a statistical relationship between labour management practices (workforce planning, recruitment/selection, training/development, health/safety, performance management, compensation/benefits, and labour relations) and project delivery critical success factors.

iii. The recommendations provided based on the research findings can be used by stakeholders in the construction industry to improve project delivery by addressing the factors that influence project delivery.

iv. The study can serve as a useful reference for construction companies, policymakers, and researchers interested in improving the Nigerian construction project delivery in the industry.

v. Overall, the research work's contribution to knowledge can help improve the construction industry's productivity and promote sustainable development in Nigeria.

5.4 Research Limitations

The research is limited to construction firms in Abuja. It could only cover the employers of the construction firms in Abuja while it could include both the employees. Lastly, the study was carried out in Abuja only, so the outcome of the findings cannot be generalised to other cities and countries except those with similar characteristics.

5.5 Area for Further Studies

Based on the research findings and recommendations, a potential area for further study could be to investigate the specific strategies and practices that construction companies in Nigeria can adopt to improve their performance management practices, including employee motivation and recognition. This could involve conducting case studies or surveys to identify best practices and successful approaches to managing employee performance in the construction industry in Nigeria. Finally, given the importance of effective labour relations practices for project delivery in the construction industry, further research could explore the specific factors that contribute to positive labour relations and employee engagement in the Nigerian context. This could involve conducting qualitative studies to understand the perspectives and experiences of employees and employers in the construction industry and identify strategies for improving labour relations and communication.

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APPENDIX A

QUESTIONNAIRE

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA

DEPARTMENT OF BUILDING, MINNA, NIGER STATE.

Department of Building,
School of Environmental Technology,
Federal University of Technology,
P.M.B. 65,
Minna, Niger State.
23rd, January, 2023

Dear Participant,

Re: Influence of Labour Management Practice on Project Delivery of Construction Firms in Abuja.

I, Godwin Gods'love, a Master Student in Construction Management**,** Department of Building,School of Environmental Technology, Federal University of Technology Minna, Niger State conducting research on **''Influence of Labour Management Practices on Project Delivery of Construction Firms in Abuja''.** Your participation in responding to this questionnaire to the best of your ability and knowledge is highly needed in order to achieve the objectives of this research.

The survey is purely meant for academic purpose and I wish to assure you that all information provided will be treated as confidential.

Thank you very much for your support, cooperation, and time.

Godwin Gods'love
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DR. A. Aka
Project Supervisor
Phone: (08035347685)
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SECTION A

1. Kindly indicate your years of experience in the construction industry.

I. 0-5 years { }
II. 6-10 years { }
III. 11-15 years { }
IV. 16-20 years { }
V. 20 and above { }

2. Kindly indicate your firm's years of practicein the construction industry.
0 – 5 ☐ 6 – 10 ☐ 11 – 15 ☐ 16 – 20 ☐ 20 and above ☐

3. Qualification of respondent

I. HND { }
II. B.sc/B.Tech/B.Eng { }
III. PGD/Master's { }
IV. PhD { }
V. Others
specify.....

4. Kindly indicate your professional affiliations:
Architecture ☐ Building ☐ Engineering ☐ Quantity Surveyors ☐ Others ☐

5. Kindly indicate your firm workforce (number of employees).
1 - 49 { } 50 – 199 { } 200 or more { }

6. Type of organisation

I. Government { }
II. Consulting { }
III. Contracting { }
IV. Others
specify.....

7. Kindly indicate the nature of work undertaken by your organisation.

I. Building construction { }
II. Civil engineering { }
III. Combination of both { }

SECTION B

From 5 (Mostly used) to 1 (Not used), what is the extent of usage of the following labour management practices in your firm?

5 = Most commonly used, 4 = More commonly used, 3 = Commonly used, 2 = Rarely used, 1= Not used

S/N	LABOUR MANAGEMENT PRACTICES IN NIGERIA CONSTRUCTION INDUSTRY	LEVEL OF USAGE				
		5	4	3	2	1
1	**WORKFORCE PLANNING**					
	Forecasting labour demand					
	Assessing labour supply or conduct a skills analysis					
	Develop a staffing plan; identify the number of workers required and their roles of responsibilities					
	Succession planning					
	Talent management					
2	**RECRUITMENT AND SELECTION**					
	Job analysis; identifying specific skills, experience, and qualifications needed for the job					
	Job posting and advertising; advertising the position on job boards or recruitment agencies, social media					
	Screening; reviewing resumes, using pre-employment tests to assess the candidate's skills and knowledge					
	Conduct in-person interviews					
	Selection and hiring; checking reference and conduct background and negotiating compensation and benefits					
3	**TRAINING AND DEVELOPMENT**					
	Safety training					
	Technical training					
	Leadership training					
	Soft skills training					
	Continuing education and professional development					
4	**PERFORMANCE MANAGEMENT**					
	Setting performance goals					
	Performance monitoring and feedback					
	Performance evaluation					
	Performance improvement planning					
	Recognition and rewards					

5	**HEALTH AND SAFETY**					
	Hazard identification and risk assessment					
	Implementation of safety procedures					
	Personal protective equipment (PPE)					
	Safety inspections and audits					
	Emergency preparedness					
6	**COMPENSATION AND BENEFITS**					
	Base salary					
	Overtime pay					
	Performance-based pay					
	Health insurance					
	Retirement benefits					
7	**LABOUR RELATIONS**					
	Collective bargaining					
	Grievance resolution					
	Labour-management committees					
	Employee involvement and participation					
	Labour laws and regulations					

From 5 (Very high influence), 4 (High influence), 3 (Moderate Influence), 2 (Low influence), 1 (No influence) what is the level of influence of the following factors on labour management practices?

S/N	FACTORS INFLUENCING LABOUR MANAGEMENT PRACTICES	5	4	3	2	1
1	**TECHNOLOGY**					
	Use of technology					
	Choosing new technology					
	Tools and equipment					
	Conducting knowledgeable program (skill training on technology)					
	Equipment non availability					
2	**ENVIRONMENTAL**					
	Provision of friendly environment for worker on-site					
	Human resource management and financial performance in the construction site					
	Local weather patterns on site					
	Ambient noise conditions					
	Hazardous work area					

3	**FINANCIAL**					
	Material and equipment cost					
	Cash flow of project					
	Project design cost					
	Profit rate of project					
	Overhead percentage of project					
4	**TRAINING AND DEVELOPMENT**					
	Provision of skilled training and development					
	Unqualified training for labours					
	Cross-utilization and cross-training					
	Technical training and development					
	Training apprentices and site supervisors					
5	**EMPLOYER/EMPLOYEE RELATIONSHIP**					
	Competency of labour supervision					
	Labour absenteeism					
	Periodic meeting with labour					
	Misunderstanding between labourers and employers					
	Participation in decision making					
	Lack of labour experience and skills					
6	**HEALTH AND SAFETY**					
	Labour safety behaviour					
	Labour injuries during construction process					
	Health insurance					
	Insurance for injury workers at the workplace					
	Health care and social assistance					
7	**MOTIVATION**					
	Lack of appreciating the efforts and contribution of workforce					
	Lack of incentive programs					
	Lack of motivation and attitude of workforce					
	Labour payment					
	Workplace atmosphere					
8	**COMMUNICATION**					
	Poor communication channels					
	Delay in project completion					
	Poor project management					
	Lack of good relation between labour and superintendents					

	Lack of information sharing					
9	**WORKFORCE PLANNING**					
	Inexperienced workforce					
	Inadequate work scheduling					
	Shortage of workforce					
	Inadequate planning					
	Using part-time workforce					
10	**ORGANISATIOINAL**					
	Satisfaction at work					
	Increase of labourer's age					
	Cultural differences					
	Economic condition of worker					
	Junior workers participation in decision making					
11	**SUPERVISION**					
	Decision during development stage or changes in drawing					
	Subcontractor performance					
	Poor supervision of labour					
	Defective work or construction mistakes					
	Lack of monitoring performance and involvement					
12	**PRODUCTIVITY**					
	Technical knowledge					
	Poor productivity					
	Communication issues					
	Poor selection of employees					
	Wrong selection of employees					
13	**EXTERNAL**					
	Weather and Season Changes					
	Government polices					
	Cultural conditions and customs of the community at the project site					
	Conflict with project stakeholders					
	Religious holidays/other holidays					

From 5 (Very high important) 4, (High important) 3, (Important) 2, (Low important) 1, (Very low important) rate the level of importance of the following critical success factors of project delivery.

S/N	CRITICAL SUCCESS FACTORS	IMPORTANCE				
		5	4	3	2	1
1	Realistic time estimate					
2	Realistic cost estimate					
3	Quality					
4	Client involvement					
5	Competent project team					
6	Understanding of project					
7	Authority of the project managers					
8	Top management support					
9	Effective communication					
10	Adequate project control					
11	Availability of resources					
12	Stakeholders involvement					
13	Project planning					
14	External factors					

From 5 (Very effective), 4 (High effective), 3 (effective), 2 (Low effective), 1 (Very low effective) rate the level of the effectiveness of the following strategies for improving labour management practices in Nigeria construction industry.

S/N	EFFECTIVE STRATEGY FOR IMPROVING LMP	5	4	3	2	1
1	Stable labour force					
2	Training and development					
3	Good wages policy					
4	Labour/trade unionism					
5	Adoption of code of industrial relation's practice					
6	Adequate compensation					
7	Healthy working environment					
8	Embracing technology					
9	Prioritizing safety					
10	Incentive and rewards					
11	Effective communication channels and collaboration					
12	Encouraging diversity and inclusion					