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## Environmental Factors and Construction Managers' Performance

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### ABSTRACT

Some environmental factors like economic, technological, cultural, legal, political, social, demographic and physical/ecological/climatic/geological environments are considered as some of the major challenges that impede the performance construction managers in most construction projects worldwide. As a result of this challenge, this study is set out to identify and assess the impact of these environmental factors on the performance of construction managers. These environmental factors that affect the performance of construction managers were discussed and include economic, technological, cultural, legal, political, social, demographic and physical/ecological/climatic/geological environments. Questionnaires were distributed to gather information from those who have acted or are presently acting as Construction managers. The results of the study revealed that all the respondents had encountered one or more of these environmental factors in their experience as construction managers with physical factor affecting respondents most with a mean score of 3.31 followed by economic factor with a mean score of 3.24. Cultural factor has the least effect with a mean score of 1.24 followed by demographic factors with a mean score of 1.48. It was discovered from the study that these factors can lead to project abandonment, loss of value for money, loss of credibility of construction managers, project time and cost overrun. The researcher then concluded by recommending that the awareness of these environmental factors should be created through organized seminars/workshops and that construction managers should be equipped with effective tools of management (planning, coordinating, organizing, and so on) to be able to reduce the impacts of these environmental factors to the barest minimum.

**Keywords:** Environmental Factors, Construction Managers, Performance, Construction Management.

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### INTRODUCTION

Construction is an activity which goes on in almost every city and town on a daily basis. Something is constantly being built or renovated wherever we look. A construction

manager is the individual who oversees such projects and ensures that they are completed as they should be. Construction management involves the organisation and co-ordination of all the resources for the

project: labour, equipment, permanent and temporary materials, supplies and utilities, money, technology and methods and time to complete the project on schedule within budget and according to standards of quality and performance specified by the designer. The construction process is an assembly process requiring physical inputs in the form of materials and components. A sound knowledge of management and procedure is crucial in any construction project. Since construction activities involve organisation and co-ordination which are functions of management (as will be seen later), there is the need for effective management of construction activities. Construction management, according to Modern Language Association; MLA (2006) is defined as the term applied to the techniques of managing the various designs and construction processes of a building project on behalf of the client or owner.

According to Datta and Mukherjee (2001) and Albert (2007), construction projects are influenced by a multitude of factors which can be external or internal to the organization responsible for its management and execution. These external or internal influences are known as the project environmental factors or project context. According to Chitkara (2011), a project exists in association with its internal and external risk-prone environment, which causes frequent changes. Frimpong, Oluwole and

Crawford (2003) also identified physical, social and financial as environmental factors that affect project delivery.

A careful look into some abandoned projects around especially in Nigeria shows that one or a combination of two or more of these environmental factors led to such construction project abandonment. It is against this backdrop that the research was carried out. Environmental factors like economic, legal, political, social, technological, cultural, demographic, physical/ecological/climatic/geographical were critically assessed and their impacts on the performance of construction Managers were evaluated. The objectives of the paper include:

1. To identify and assess environmental factors that affect the performance of Construction Managers.
2. To examine the specific areas in which these factors affect the performance of Construction Managers.
3. To assess the overall effects of these factors on the performance of Construction Managers.

### **An Overview of Construction Management**

Chris (2008) noted that construction projects have a specific set of objectives and constraints such as a required time frame for

completion. In any setting or organisation in which things must be done or objectives are set to be achieved through some combination of resources.

Workers in a construction site have specialized skill and they too need specialized tools which are very expensive. An effective site management is needed in monitoring and in the inventory of these tools since they can be a sure target of an opportunistic thief which will facilitate the resolution of disputes in case some contractors will claim for salary they did not even come for work. In fact, some companies are claiming compensation when projects are delayed.

Construction management is a discipline comprising systematic approaches to control time, cost and quality of a construction project based on recorded research and experience. Though construction management must have been applied in the construction of Egypt pyramids centuries ago, but the discipline of management is relatively new, and origins of modern management can be traced to the beginning of last century.

### **Functions of Construction Managers**

Srinath (2006) identified the following as duties and responsibilities of construction managers:

Planning, directing and coordinating the construction project,

Overseeing the entire construction project or part of a project, Scheduling and co-ordinating all types of design during the construction process, Selecting, hiring and overseeing the work and their immediate supervisors, Ensuring that the project is completed within a specified time, Determine the best source of construction materials, He is responsible for scheduling and estimating the time required to complete the project, Overseeing the selection of trade contractors and general contractors who are ideal for the completion of the project, Determining the labour requirements, Supervising or monitoring the hiring and firing of construction workers, Overseeing the performance of contractors, Ensuring that the construction work is completed on schedule, Monitoring and directing the progress in the construction site, Overseeing the delivery of materials, construction tools and equipment, Ensuring that the construction resources are well used, Ensuring that all safety precautions are adhered to by the construction workers, Obtain the necessary licences or permits, and so on.

### **Environmental Factors that Affects the Performance of Construction Managers**

Wartz (1995) defines the environment as surroundings; external conditions influencing development or growth of people, animal or plant;

living or working conditions. Lester (2007) identified political, economic, social, technical and legal as the factors influencing project. Hughes (1999) identified factors that constitute environment of projects as political, legal, institutional, cultural, sociological, technological resources, economic, financial and physical infrastructure. However, some factors within the environment pose greater challenges to projects, management and organizational structure than other. These should form the focus for the management of the environmental factors.

**Economic Environment:** Dixon (2000) opined that the economic environment affects the organisation because of two reasons: i. It relates to the effect of changes in the price level on the company and ii. The level of general economic activity in the country indicates the likelihood of consumer income rising or falling. He concluded that this in turn will affect the company's sales, costs and wage rates. This affects the performance of construction managers as it has to do with matters relating to cost and wages. Grift and Watson (2004) pointed out that the company must respond to varying changes in monetary values and that this factor will also impinge upon the supply and demand for the service or product, subject to the rules of elasticity.

**Technological Factor:** The construction managers have to constantly adjust to changes in technology if their operation and activities are to be relevant and for their goals to be achieved. Dixon (2000) opined that recent development in technology have had an enormous influence on the ways in which companies operate. According to Froese (2002), there has been an increasing trend towards the use of computers and some other communication devices as the main tools for working with engineering information. Sandhir (2010) noted that there still exist concerns over the sector's ability to take advantage of new technologies coupled with costs associated with these innovations. Testa (2004) pointed out that new applications as Construct ware, Project Net and Project centre serve to network project participants which enables designers, engineers, contractors, sub-contractors and suppliers to use a centralised database. Froese (2003) opined that Architecture, engineering Construction management and facilities management industry is an information intensive industry and is increasingly dependent upon effective information technology (IT).

**Cultural Environment:** Dixon (2000) pointed out that this is made up of attitudes, customs, beliefs, education, and so on of people and society at

large. He said that the most important determining factor of this social environment is the class, culture, age, sex and political beliefs of the people in it. He concluded that since the organisations are made up of people who are part of this external environment, the social environment has significant influence upon organisation and the ways in which they are managed. Therefore, since Construction Managers will have to manage people of various beliefs, culture, and so on, to achieve their goal, they will have to consider this factor carefully as it can affect their overall performance. .Mogbo (2000) noted that Nigeria planners need to be reminded that Traditions remain the same, only their physical manifestation change. Similarly, we need to be reminded that planning, design and construction are for people.

**Legal Environment:** Liz (1996) gave examples of legal influences on organisations to include acts which regulate their activities, for example, employment Acts. Dixon (2000) pointed out that the legal factor is a very important external constraint on organisations. He said that the law sets out the operating conditions of most business ranging from specific bans on certain kinds of behaviour, to regulations requiring the reporting of income and staffing at various times of the year. For example, the Environmental Impact Assessment

(EIA) must be carried out before any construction and the report submitted to appropriate authority. The EIA is a law enacted to protect the environment from the impact of construction activities. A construction Manager will therefore have to ensure compliance with this law, where it is in operation, for him/her to be able to carry his/ her function without any problem.

**Political Environment:** Liz (1996) identified political factors as Government policies like privatisation, regeneration, deregulation, control interest or exchange rate and alignment of rules such as employees' right. Dixon (2000) however identified political environment to consist of the government and parliament or legislatures which pass the laws and regulations which affect the way organisation responds to this environment may well determine its success or failure. According to Sidwell (1990) construction industries are operating in a dynamic environment such as unstable government policy, political instability, political agitation, legislation, and election period. The stability or otherwise of government and government policies affect greatly managerial decisions and the performance of construction Managers.

**Social Environment:** Dixon (2000) combined this with the cultural environment and pointed out that it is made up of attitudes, customs, beliefs, education, and so on of people and society at large. He said that the most important determining factor of this social environment is the class, culture, age, sex and political beliefs of the people in it. He concluded that since the organisations are made up of people who are part of this external environment, the social environment has significant influence upon organisation and the ways in which they are managed Mac-Barango (2006) stated that the Nigerian social environment is characterised by general insecurity and negative social vices. Changes in social environment affect the consumers' attitude and lifestyle and hence the purchasing and consumption. The construction Managers have to take cognisance of this so as to be able to perform as expected.

**Demographic Factors:** Population and its distribution affect the market for goods and services. Location or citing of capital projects like housing estate, for example, depends largely on the population density of such area. The construction Manager has to take into consideration the composition of the population and identify its core potential market. Ugbomeh and Usifo (2005) pointed out that population growth is normally influenced by three

main factors, namely, birth, death and migration. National population increases is influenced by the balance between births and deaths, while National population growth includes national increase and the balance between emigration and immigration.

#### **Physical /Ecological /Climatic /Geological**

**Environment:** Sharp et-al (1988) pointed out that the environment contains resources that are usable in the production of goods and services. The environment consists of air, water and land. Oumal et al (2005) in Oloruntade and Oguntunde (2009) pointed out that rainfall is the most important climatic element especially in the tropics because it determines many activities which are dominant in the economies of the developing countries. The recent climatic change all over the world will affect the planning of the work of construction managers as rainfall may disrupt some major construction works which may lead to delay in completion time.

#### **Impacts of the Environmental Factors on the Performance of the Construction Managers**

The effects of these factors can be frustrating and devastating on the part of all that has stake in the construction:

1. Project abandonment could result if these factors are not properly controlled.

- II. It can lead to loss of credibility on the part of the construction Managers.
- III. The client might be robbed of value for his money.
- IV. The project could go beyond the budgeted cost and time.
- V. It may result into huge loss on the part of constructing organisation.

construction site within South Western part of Nigeria. The study population comprises of professionals, firms and companies who have also acted as constructional managers. 120 questionnaires were administered which relatively mean a sample size of 120 out of which 102 was returned. This represents about 85% of the sample size. The data collected from the questionnaires was analysed using appropriate statistical method of analysis, which includes: Statistical tabulation, using the statistical package for social sciences (SPSS) and Descriptive analysis, that is, making use of frequencies and percentages (based on ranking) to present the findings of the study.

## METHODOLOGY

In achieving this research work involved a field study carried out by the administration of questionnaires for data collection. Questionnaires were distributed to professionals within the construction industry who had acted or currently acting as constructional manager on

### Data Presentation

Factors affecting Performance of Construction Manager

Factors	Mean	Rank
Physical/Climatic, etc	3.31	1 <sup>st</sup>
Economic	3.24	2 <sup>nd</sup>
Social	2.80	3 <sup>rd</sup>
Political	2.71	4 <sup>th</sup>
Technological	1.93	5 <sup>th</sup>
Legal	1.71	6 <sup>th</sup>
Demographic factors	1.48	7 <sup>th</sup>
Cultural	1.24	8 <sup>th</sup>

From the table, physical / climatic factor affects the performance of construction managers very often followed by Economic factor, social

factor, political factor, Technological factor, legal factor demographic factor and cultural factor.

**Environmental Factors and Construction Managers' Performance**

Specific areas where environmental factors affect the Performance Construction Manager

<b>Factors</b>	<b>Mean</b>	<b>Rank</b>
Planning	4.07	1 <sup>st</sup>
Coordinating	4.00	2 <sup>nd</sup>
Organizing	3.43	3 <sup>rd</sup>
Controlling	2.79	4 <sup>th</sup>
Communicating	2.64	5 <sup>th</sup>
Forecasting	2.26	6 <sup>th</sup>
Motivating	1.50	7 <sup>th</sup>
Goal Setting	1.20	8 <sup>th</sup>

From the table, specific areas in which these environmental factors affect the performance of construction managers

most are in planning, coordinating and organizing.

Rating of impacts of environmental factors on the Performance of Construction Manager

<b>Factors</b>	<b>Mean</b>	<b>Rank</b>
Physical/ Climatic, etc	4.00	1st
Economic	3.29	2nd
Legal	3.00	3rd
Political	3.00	3rd
Social	2.50	5th
Technological	2.43	6th
Demographic factor	2.07	7th
Cultural	1.24	8th

From the table, physical factor has the greatest impact on the performance of construction managers followed by Economic, Legal, Political,

Social, Technological, and Demographic and Cultural factors.



Rating of impacts of environmental factors on the performance of Construction Manager

Areas	Mean	Rank
Project time overrun	5.00	1st
Project costs overrun	4.90	2nd
Project abandonment	4.83	3rd
Loss of profit by contractor	4.36	4th
Loss of value for money by the client	4.35	5th
Loss of credibility of Construction Managers	4.33	6th

From table these environmental factors can lead to project time overrun, project cost overrun, project abandonment loss of value for money and loss of credibility by construction managers.

## CONCLUSION AND RECOMMENDATION

From the study, it was discovered that factors that affect the performance of construction managers are rainfall, climatic changes, tidal changes, erosion, and air and land pollution all of which comes under physical/climatic factors. Stability or otherwise of political factors such as Government policies like privatisation, deregulation, control interest and laws and regulations also affect the performance of construction managers. Also it was discovered that economic factors such as the supplier, customers, investors and the government's fiscal and monetary policies affect the performance of construction managers. It was also discovered from the research work that the specific areas in which these environmental factors affect the

performance of construction managers most are in planning, coordinating and organizing.

The research also reveal that these factors can lead to loss of credibility of construction managers, project abandonment, loss of value for money by the client, project cost and time overrun and loss of profit on the part of the contractor.

Measures that could help in reducing the impacts of environmental factors to the barest minimum are recommended below:

1. There should be adequate planning and scheduling of construction activities by the construction managers so as to ensure that their performances are not adversely affected by physical/climatic factors.
2. Construction managers should know how to relate and handle various situations that can pose economic challenge to him like dealing with various suppliers, clients and government's fiscal and monetary policies.
3. Any professional acting as construction manager should take

cognisance of these factors at the inception of the construction process and take necessary precautionary measures to prevent them from affecting their performances.

4. Construction managers should be equipped with effective tools (especially planning and communication) to be able to reduce the impact of these factors to the barest minimum.

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