An Examination of Human Capital Influencing Factors in Project Execution in Ondo State, South-West Nigeria

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ABSTRACT

Project execution tasks are usually confronted with some human capital problems in planning, evaluations and control in the construction industry. Consequently, this study has examined those Human Capital influencing factors on project execution (construction) in Ondo State, Southwest-Nigeria. Questionnaire was administered on some professionals classified as consultants, contractors and clients in the study area. A survey approach was used and a purposive sampling method was adopted for the study. The socio-economic characteristics of the respondents and some factors having influence on project execution were analyzed using some statistical tools such as frequency distribution, percentages, bar charts, and the relative importance index (RII). Two research hypotheses were formulated and tested to support the study using the Chi-Square (X2) method at 5% level of significance. The study revealed that there is a significant relationship between project execution polices and successful engineering projects performance. The study also found out that improved administrative and economic skills of project managers would translate into a better project performance in the construction industry in the State.

Keywords: *Construction Projects, Human Capital, Ranking, Influencing Factors and Execution*

Introduction

The industrial and economic development of any nation can truly be achieved through government investment in some of her strategic and productive sectors of the economy. Nagarajan, (2015) reports that the main reason for Government investment in the productive sectors is to fulfill government objectives to improve the economic status of its citizens and their well-being. This can be achieved by creating adequate infrastructural facilities that are expected to increase and sustain their financial and socio-economic standing. Sharma &Vashit (2010) cited in (Diuqwu, *et al* 2015) equally corroborate this by stating that infrastructure is the driving force of industrial development while Sarka, (2009) shares the view that functional infrastructure enhances industrial productivity of a country. Agagu (2005) affirms that Ondo State has been an agrarian state from its creation in 1976 and the state is also blessed with human and mineral resources. Consequently, the leaders in the state embarked on industrial development, which led to the establishment of some agro-allied industries, construction firms and mineral processing plants in the state. These industrial development initiatives in the state served as a vessel of social integration and rapid transformation which involved the citizens, professionals and the government. This is typically aiming at building a stronger social and economically developed Ondo State. Amusan (2014) posits that the construction industry in Nigeria had been the major source of employment for about 70% of the labour force in the country was employed by the construction industry. The investment desire from both private and public sectors of the economy are driven and guided by government policies with regards to the state economic and infrastructural development plans. In the early 1980's the contributions from the construction industry to our national gross domestic product (GDP) in Nigeria was up to 7% (NCP, 1989). Unfortunately, the contribution of the construction project in Nigeria eroded to 1% of the GDP by the year 2002, as reported by the African Development Bank / Organization for Economic Co-operation and Development (AFDB/ DECD,2004) due to poor performance, with low demand and productivity over the years (olomolaiye,1987,Anekwe,1995,Okuwoga,1998; Adeyemi, Oladapo and Akindele,2005).

Statement of the problem

The agro-allied industries, mineral processing plants and road construction companies established in Ondo State in the 1980's by the leaders in Ondo State, created employment opportunities, enhanced the socio-economic well-being of the people, which also promoted literacy, industrial development and growth are now in a state of decay. This study therefore examined the impact of human capital influencing factors on the present developmental projects in the construction sectors of the economy in the State.

Review of Literature

Construction project is an everlasting activity across the globe and its profitability fluctuates like any other business according to the law of demand and supply. Chitkara, (2006). whenever there is a demand or need for a project, an Engineer or Architect (a consultant) is employed to prepare the project drawings and design, the project that will satisfy the needs of the client (Davou,2005;Gana&Olorunfemi, 2015).The import of this is that the construction project plays an important and significant role in our national development. Mogbo (2004) cited in (Olateju, 2015) submits that the construction industry is being used to control the economies of nations and it has a strong link with politics, economics, sociology and the legal framework. In fact, project classification can also evolve as a result of the expansion in human knowledge, science and engineering. Nagarajan (2015) reports that the following are the important project classifications; new projects, expansion, balancing, renovation, replacement, diversification, backward integration and forward integration. Project Construction is considered an industry that involves complex and dynamic processes. The project consists of successful coordination of multiple discrete business entities such as professionals, tradesmen, manufacturers, trade unions, investors, specialists, trade contractors, and others (Keane &Caletka2008). However, Philip,(1968) and Ward,(1979) presented construction project as a high-value, time bound, special construction mission with predetermined performance objectives. Therefore, the issue of project construction must be taken very seriously by the clients, contractors and the consultants. Many authors and researchers shared similar views of inadequate project formulations in Nigeria as the major cause of project failure. Similarly, Gittinger, (1982) opines that projects are the cutting edge of development in many parts of the world, unfortunately, the capacity to prepare and analyze project before selection is lacking in many developing countries. The inability to have sound project formulation is linked to the problem of human capital which in turn has negative consequences on project execution. The human capital is defined as a stock of productive skills, experience, knowledge, exposure, talent, etc possessed by the workforce in any organization. (Godwin, 2014)

Akarakiri, (2007) cited in (Olateju, 2015) defines project as any scheme or part of a scheme for investing resource(s) which can reasonably be analyzed and evaluated as an independent unit. According to Iyoha, (2003), projects have massive effects on our nation's economy. They have positive roles to play in national development. Also, explaining the two main levels of planning associated with construction projects given by (Harris and McCaffer,2005) as the strategic and the operational planning. The strategic includes the high level selection of overall project objectives which includes; the scope of the project, procurement routes, time scale and financial options while the operational planning involves establishing a method statement for each activity. The

concept of planning in project involves deciding in advance what is to be done, how and what order to follow so as to achieve the desired objectives (Chitkara, 2006). Project planning is a function of human capital and an important project management process in any organization. Supporting this, Mee-Edoiye (2006) affirms that planning and control are the key issues in the management of large projects. A few models and techniques such as Critical path Method, (CPM), Project Evaluation and Review Technique,(PERT) and the Graphical Evaluation and Review Technique (GERT) though very expensive, are currently in use at different stages of project development. However, in construction project it was reported that the missing and delayed information access constitute about 50-80% of the problems in projects (Howell and Bellard, 1979; Thamaset et al, 1997). It was revealed that when data are collected accurately and comprehensively on a construction site and transferred on time to a site office, this is very vital for correct assessment of job conditions that are used in management tasks, which aid project planning and cost control (Garza and Howitt, 1998; Navon and Goldschmidth, 1999).

Enshassi *et al*(2009); Mamman and Omozokpia (2004) stated that the construction industry is complex in nature because it involves large number of project stakeholders as consultants, clients and contractors, stakeholders, shareholders and regulators to achieve a successful completion of a project as cited in Oyewale and Babalola (2016).Gana & Olorunfemi.(2015) identified the following as some of the problems confronting the construction industry in Abuja (FCT), Kwara and Niger States of Nigeria; Lack of skilled labour, inexperienced indigenous project managers, inefficient management of human and material resources and the unethical practices among the key project operators.PMI, (2013) defines project management as the application of knowledge, skills, tools and techniques to project activities in order to meet project requirements. However, the human capital is seen to be the most important and useful components for organizations in competition areas, and to support the organization effectively, management information system managers must manage their human resources effectively (Chen *et al* 2005). Contributing to teamwork in the workplace (Sears and Clough, 1991) suggest that construction managers must possess three essential attributes; (i) have practical experience, (ii) familiar with various tools and techniques for planning, scheduling and controlling construction operations and (iii) have personality and insight that will enable the attainment of teamwork with other people under very strained and trying circumstances. In addition, Hartog, (1999) presents human capital as a factor of production just like other capitals needed in the production process. Arindam and Pradip (2005) support the above submissions and said that human capital is required to make best use of other physical and economical capitals during the production process. Therefore, human capital is very important to the construction industry in Nigeria.

Methodology

Research Design

The study adopted a survey approach in obtaining all relevant cross- sectional data required, through the administration of a well-structured questionnaire.

Population of the study

The population comprises of all the professionals in the construction industry in Ondo state. The available population was from the list of registered construction companies with the State ministry of works Akure, Ondo State. The professionals are classified as the clients, consultants and contractors.

Sample of the study

The sample for the study consist of all the professional experts from the six construction companies which include clients, consultants and contractors working on different road projects in the state.

Sampling Technique

The sample is purposively selected. Six road projects were selected, two from each of the three senatorial districts of the state, one of them is on-going while the other one is already completed, which means that three roads projects were already completed and three on-going in the state.

Research Instrument

The research instrument utilized was a questionnaire. The respondents were asked to indicate their level of agreement and disagreement to some commonly accepted project management activities placed on five points Likert rating scale of 1 to 5, with 5 being strongly agree while 1 is strongly disagree.

Data collection method

The study commenced with the construction of a well-structured questionnaire for the collection of appropriate primary data, and a total number of 120 copies questionnaire were administered and 104 copies were completed and returned for the study. This represents a response rate of 86.7%. The secondary data sources included; relevant academic journals, textbooks and proceedings of conferences.

Objective of the study

The main objective of this study is to examine the human capital influencing factors affecting project construction activities in Ondo State Southwest-Nigeria. The specific objectives are;

(1)to discuss the execution policy and planning for engineering projects

(2)to identify the socio-economic characteristics of the project managers in the study area.

Research Questions

Towards achieving the objective of this study, the following research questions were asked.

1. Could engineering projects execution policies and planning be significantly related to its overall performance? Could the economic, financial and environmental factors have any significant impact on the successful execution of engineering project in the study area?

The above research questions were addressed. Consequently, two hypotheses were formulated to support the study and were tested at 5% level of significance.

$H_{o1;}$ *project execution policies and planning are not significantly related to the overall project performance in Ondo State.*

$H_{O2;}$ *the economic and environmental factors will not have significant impact on successful execution of engineering projects in Ondo State.*

Data Analysis Method

Relative Importance Index

The data generated was analyzed using the following statistical tools; (RII) relative importance index, Chi-square method, percentages, bar chart, frequency distribution and the mean method. The perception of the clients, consultants and contractors working in Ondo State was determined using the relative importance index (RII) on the contribution of each of the performance key factors They were examined and the ranking of the attributes in terms of their criticality, as perceived by the respondents, using of Relative Importance Index (RII). The index was cited in Babalola and Oyewale (2016) as equation 1.

$$RII = \frac{\sum W}{AxN} \quad \ldots\ldots \quad (0 \leq RII \leq 1) \quad \ldots\ldots\text{Equation 1}$$

Chi-Square Method

The choice of chi-square was taken because the research topic consists of one dependent variable and one independent variable.

The chi square test can be obtained using the formula:

$$X^2 = \sum_{i=1}^{k} \frac{(O-E)^2}{E} \quad \ldots\ldots\text{Equation 2}$$

Where,

X^2= calculated Chi-square value, O = observed value, E = expected value, k = number of categories, or possible outcome

Decision Rule:

If the p-value ≤ 0.05 level of significance, hence there is a significant relationship, H_o will be rejected and Ha will be accepted. If the p-value ≥

0.05 level of significance, hence there is no significant relationship. H_o will be accepted while H_a will be rejected

Results and Discussion

The issue focused in this study was to examine the human capital influencing factors on engineering project execution (construction) in Ondo State, South-western Nigeria.

Engineering Project Management Policies for Project Construction

Given that appropriate project management policy decisions are very crucial to project construction activities, Figure 2 shows that internal monitoring team from the parents' organization/client during the construction period dominates policy decisions with (95.2%) It is followed by 88.5% of the respondents, as agreed that timely execution of projects within the approved cost estimates would give quality job performance. Then 87.5% of the respondents asserted that junior workers decision counts if management would improve in its job performance while 86.5% hold for the general perception that project execution policies determine the overall project performance. These project management policy decisions are very important for appropriate decision making to ensure organizational supports and cooperation, timeliness of delivery, quality and project precision in the study area.

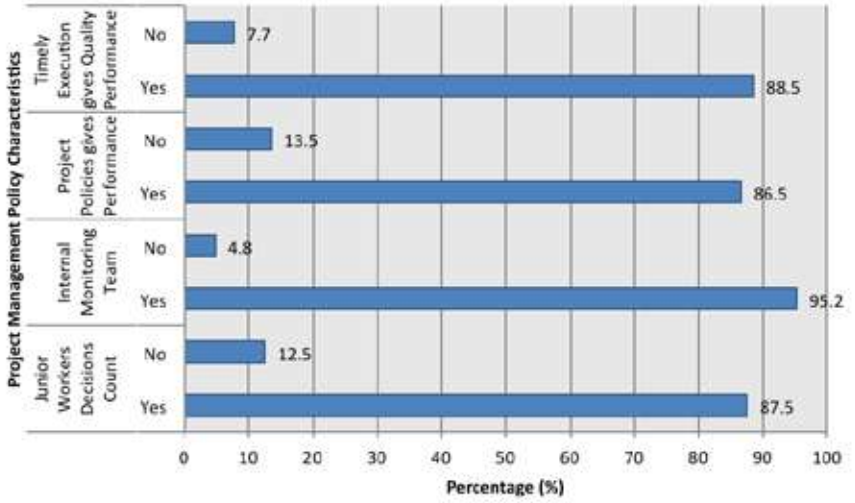

Figure 1: Distribution of Project Management Policy Decisions

Source: Field data, 2016

Project Management Planning decision for Project Execution (construction)

Figure 3 presents various project management planning decision options for successful project construction, the study reveals that improved administrative and economic skills of project managers would translate into a better performance, dominates organizational planning decisions with (99.1%). Further distribution shows that project document availability is considered next as a major planning decision in construction by 89.4% of the respondents while time overrun (76%) and project cost review (74%) are both classed least of organizational planning decisions for project execution. It becomes clear therefore that improvements in project managers' skills through in-service training and organizational transparency by making project document availability to all stakeholders would ensure successful management planning decisions towards effective project policy, planning development and implementation in the study area.

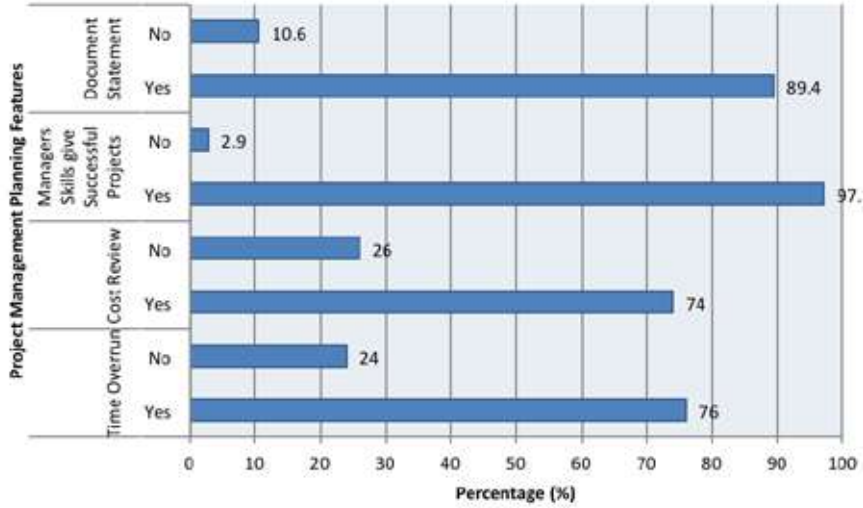

Figure 2. Distribution of Project Management Planning Decisions

Source: Field data, 2016

Relative Importance Index on Factors Influencing Projects Execution Processes in Ondo State

In the first group, success factor that is aiding effective project execution, the relative importance index (RII) of environmental impact assessment (EIA) conducted on projects, presence of youth restiveness in the project area and government interference on project recorded were 0.7269, 0.7096 and 0.6884 in that order, and therefore were ranked in the 1st, 2nd and 3rd in position.

As indicated in the second group of key project success factor, the relative importance index (RII)of 0.8134 that project timely completion is assured, RII of 0.8000 for always matching project quality parameters in the BEME /(Bill of Quantity) and RII of 0.7980 for not always adhering to project technical parameters by project in that order were ranked in the 1st, 2nd and 3rd in position. In terms of performance factor in project construction, communication flow across the team members, timely construction and commissioning of project and inducting resources/materials following due process of government were ranked in 1st, 2nd, 3rd in position with RII of 0.7923, 0.7884 and 0.7461 respectively.

As indicated in the group of socio- economic characteristics of project managers, the joint relative importance index (RII) of 0.7673 for being a good negotiator and an analyst in that order were both ranked in the 1st position and RII of 0.7500 for being a decision maker was ranked in the 3rd position. Approval granted for the project jointly shared index with project definition given by the parent organization (RII=0.6903) were ranked in the 1st, 2nd and 3rd position in that order.

On the basis of the success factor for establishing structural relationship among people, division of project work into component activities jointly shared index with establishing structural relationship to secure proper project coordination were both ranked 1st in position with RII of 0.7019 while the design job structures for the staff was ranked 3rd in position with RII of 0.6903 in that order.

It therefore can be obtained from this study that three factors under key project element success factors namely; project timely completion is assured, always matching project quality parameters in the bill of quantity and always adhering to project technical parameters by project have the highest relative importance index. This study therefore revealed that most of the factors influencing engineering projects execution processes on the study area are the key elementary project factors.

Table 1: Relative Importance Index on Factors Influencing Projects Execution Processes

FACTORS	RII	RELATIVE RANK
Factor that Aid Effective Project Execution		
The feasibility studies have impact on the project directly.	0.5865	5th
Environmental impact assessment (EIA) conducted on the project.	0.7269	1st
There was/is community involvement in the project execution.	0.6057	4th
Presence of youth restiveness in the project area.	0.7096	2nd

Government interference on the project was recorded.	0.6884	3rd
Key Project Element Success Factor		
Project timely completion is assured.	0.8134	1st
Project completion is within cost targets.	0.5442	4th
Always matching project quality parameters in the bill of quantity	0.8000	2nd
Adherence to project technical parameters by project is not always.	0.7980	3rd
Performance Factor in Project Construction		
Carryout planning and controlling effectively in project execution	0.7442	4th
Inducting resources/materials following due process of government.	0.7461	3rd
Ensure timely construction and commissioning of projects.	0.7884	2nd
Final handling over to the client as schedule.	0.6942	5th
Communication flow across the team members	0.7923	1st
Socio- Economic Characteristics of Project Managers		
Has administrative competence (Administrator)	0.7192	10th
Has high Financial management skill	0.7250	9th
Has economic management skill	0.7384	7th
Conflict resolution expert	0.7615	3rd
Motivator	0.7442	5th
Good communicator	0.7423	6th
Good Negotiator	0.7673	1st
Analyst	0.7673	1st
Decision maker	0.7500	4th
Computer literacy	0.7269	8th
Success Factor for Establishing Structural Relationship among People		
Divide project work into component activities.	0.7019	1st
Design job structures for the staff.	0.6903	3rd
Define the performance targets and responsibility for the workers.	0.6750	6th
Allocate the available resources equitably.	0.6884	4th
Delegate authority that commensurate with the workers responsibility	0.6846	5th
Establishing structural relationship to secure proper project coordination	0.7019	1st

Hypothesis Testing

Hypothesis one

H_{01}: that project execution policies and planning are not significantly related to the overall project performance in Ondo State.

As shown on Table 2, the X^2 Statistic Goodness of Fit of 55.538 was obtained at Degree of freedom (Df) of 1 with a P<0.05 level of significance. Therefore, the Null hypothesis (H_0) is rejected. Project execution policies have significance influence on the project performance in Ondo State. The result of the hypothesis tested revealed that there is a significant relationship between project construction policies, and project performance in Ondo State.

Table 2: Chi-Square test measuring the Goodness of Fit that project execution policies are not significantly related to overall project performance in Ondo State.

Item	N	Df (V)	X^2-Statistic	P-value	Significance
Yes	90				
No	14	1	55.538	0.000	Significant
P<0.05	104				

Hypothesis Two

H_{02}: that economic and environmental factor will not have significant impact on successful execution of engineering projects in Ondo State.

As shown on Table 3, the X^2 Statistic Goodness of Fit of 61.538 was obtained at Degree of freedom (Df) of 1 with a P<0.05 level of significance. Therefore, the Null hypothesis (H_0) is rejected. Economic and environmental factors have significance impact on successful execution of engineering projects in Ondo State. The result of the hypothesis tested revealed that there is a significant relationship between economic and environmental variables and successful project implementation.

Table 3: Chi-Square test measuring the Goodness of Fit that economic and environmental factors will not have significant impact on successful execution of engineering projects in Ondo State.

Item	N	Df (V)	X^2-Statistic	P-value	Significance
Yes	92				
No	12	1	61.538	0.000	Significant
P<0.05	104				

Conclusion and Recommendations

The empirical results support the fact that the core project element factors such as; timely project completion assurances, always matching project quality parameters in the Bill of Engineering Measurement and Evaluation (BEME) and always adhering to project technical parameters by the project managers are the most important determining factors responsible for public project execution (construction) in the area. Also revealed that corporate managerial, management skills and experiences as an arm of human capital development and the core engineering project element factors would jointly determine successful engineering project execution in Ondo State. Corporate managers must ensure adequate investment in their workers through training and education on multiple and specialized project managerial skills and decision making tools based on verifiable statistical inferences for planning purposes and a required step towards efficient human capital delivery in an organization. Project organizations must ensure meeting up with the assurances of timely project delivery as scheduled in the project document. Corporate organizations and the government should ensure that environmental impact assessment of new projects, are carried out before embarking on the construction of such project.

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