EVALUATION OF FACTORS RESPONSIBLE FOR DYNAMICS OF DIRECT COSTS OF BUILDING ELEMENTS IN CROSS-RIVER STATE, NIGERIA

A.O. Ujene[1*], E. Achuenu[2]
[1]*Department of Building, University of Uyo, Uyo, Akwa-Ibom State, Nigeria*
[2]*Department of Building, University of Jos, Jos, Nigeria*
*Corresponding author: ujenetony@yahoo.com

Abstract

The difficulty in accurately forecasting costs of building projects is traceable to inability to determine the nature and causes of variation in direct costs. This study evaluates the severity of the impact of eighty factors responsible for the dynamics of direct cost of building elements in Cross River State of Nigeria. The objective is to compare consultants and contractors perception of the severity of the factors on differential in direct costs. To achieve this objective, a field survey involving a sample of 91 contractors and 46 consultants was conducted. Data were collected with the aid of structured questionnaires and analysed using mean item score, and Mann-Whitney U test. The results reveal that fifteen factors have very high significant effect on the dynamics of direct costs (MS ≥ 4.20) from environmental, macro-economic and construction related factors. There is also high agreement between contractors and consultants' perception of the influence of the factors (P=0.801). It is recommended that stakeholders should give adequate priority to site conditions, method of construction, macroeconomic indices and cost control mechanism through effective planning, cost recording and cost analysis in their effort to accurately forecast cost of projects.

Key words: building elements, consultants, contractors, cost dynamics, direct costs.

Introduction

In Nigeria like other developing countries, the construction industry is one of the major industries that contribute significantly to the growth of socio-economic development. It is very necessary to ensure adequate management of the construction project for improved performance. According to Memon *et al* (2010) cost is among the major considerations throughout the project management life cycle and can be regarded as one of the most important criteria of projects success. The need to focus on cost assessment stems from the fact that clients in Nigerian construction industry are usually compelled to pay for unbudgeted increase in project costs at varying degrees which Achuenu (1999), Ogunsemi and Jagboro (2006) and Amusan (2011) attributed to wrong cost estimation. The task of forecasting is part of planning which determine building costs performance, as incorrect forecast will inevitably lead to ineffective use of resources (Cheung, 2005). The resources which comprise cost elements namely; material, labour, plant and machinery costs, administration costs and other expenses are usually categorized into 'Direct costs' and 'Indirect costs' for ease of cost planning and control (Chitkara, 2006).

According to Chitkara (2006) direct costs vary from about 65 percent to 93 percent of the total costs. This enormous contribution of direct costs to the total construction costs calls for serious concern in the planning, allocation and management of construction costs. The difficulty in accurately predicting construction cost is because the cost advisers do not know what the dynamics and value of construction cost is in every stage of construction projects (Juodis and Stalioraitis, 2006). The cost performance of construction projects changes or varies over place and time due to numerous internal and external factors which affect the components of construction costs as observed by Amusan (2011). The consequences of poor cost anticipation and management are cost overrun, delay and abandonment of project, loss of profit, bankruptcy and insolvency by contractors. Other consequences are loss of quality, clients' dissatisfaction and disputes among stakeholders (Oyewobi, Ibironke, Ganiyu and Ola-Awo, 2011; Ogunsemi and Aje, 2006).

In order to address the problem of inaccurate cost prediction in Nigeria in general as noted by Achuenu (1999), Ogunsemi and Jagboro (2006) and Amusan (2011) and particularly in South-South geo-political zone of Nigeria as noted by Ujene (2011), it is imperative to advance an understanding of the nature and causes of direct cost differential of building elements in Cross River being a prominent state in South-South of Nigeria. This study therefore, focuses on evaluating the factors which are responsible for cost differential over place and time within Cross River state. The choice of the state is consequent upon the recent increased tempo in construction activities as a result of the state government policy for massive infrastructural development especially construction and renovation of

institutional buildings all over the state (Ministry of Education, 2011). This government effort should be complimented by concerted construction management efforts.

The Objectives of the Study

The objectives of this study are to identify and evaluate the factors responsible for cost dynamics in the state and to compare the consultants and contractors perceptions of the relative effect of the factors responsible for dynamics of direct costs of building elements in Cross River state of Nigeria. The study in line with the objectives is to test the hypothesis that there is no significant difference between the perception of the consultants and contractors concerning the effects of the factors causing the dynamics of direct cost in the state.

Review of Related Studies

The following are summary of up-to-date review of literature related to the study on important issues of cost, cost variability and factors affecting construction costs which geared towards justifying the defined objectives of this study.

The Concept of Cost

The term building cost has been defined as the cost incurred by a contractor in carrying out works (Duncan, 1996; Ferry and Bradon, 1999 and Warsame, 2006a). Chitkara (2006) identified the elements of this cost to include labour costs, material costs, plant and machinery costs and other expenses. These for ease of estimation are grouped into direct and indirect costs. Warsame (2006b) observed that in order to unearth the roots of construction cost escalation disparities between large and small regions, one can focus solely on the components of construction costs- direct and indirect costs- and anticipate that unit price (labour, material, and equipment) and overhead cost differences that exist between the regions will explain the observed divergences.

The variation of cost components in various trades of building projects in Nigeria has been investigated by Ayeni (1987). The study investigated the differential in labour and material costs of various trades of a building project and observed that the percentages of labour costs vary between 20% and 90%, while that of material costs vary between 10% and 80% across different trades. Achuenu and Ujene (2006) established that the average proportions of material costs in the elements investigated vary between 42%-77% in public and private projects, while the average proportion of labour costs vary between 23% and 58% in public and private projects in selected states in Nigeria. These studies however, did not investigate the causes of the cost variations.

Regional Cost Differentials

In an effort to address the problem of the cost differentials which exist in construction projects located across the United States, Johannes, Koch and Rasche (1985) employed economic theory of cost function to derive geographical cost differentials for construction projects located across major US cities relative to Washington, DC. The study noted that the cost of construction in the new region relative to the cost of construction in another area is one of the important decision input to expand into a new geographical area through new construction. This relative cost which it referred to as 'area cost factors', are simply geometric averages of the local factors prices relative to factor prices in a base region. Johannes, Koch and Rasche (1985) noted that, area cost factors are related to regional variation in input costs, such as labour, capital and materials. Cost functions were then developed from which area cost factors for military construction were derived. The study helps to explain the concept of the dynamics and value of construction costs in every construction project with respect to location and time, which is the underlying foundation of the concept of this study.

The Scottish Executive Development Department in 2002 commissioned a study into historic cost and price movements in the Scottish construction industry, with particular reference to the refurbishment and maintenance of social housing. The study was to improve the Scottish Executive's understanding of the extent to which future price movements are likely to affect the overall costs of carrying out construction projects over the medium to long term. The result of the study published in The Scottish Government Research Report (2004) shows that, current construction prices within Scotland can vary by up to 8% above or 9% below the Scottish average (within the Scottish mainland) due to the relative remoteness and/or nature of the construction sector in some areas.

The study observed that construction costs in Scotland's island authorities (specifically the Western Isles, Orkney and Shetland) as at then tend to exceed average Scottish mainland costs by between 8% and 26% depending on geographic and market conditions in the area in question. The findings suggested that these cost differences are caused by some factors which it did not evaluate.

Housing provision in urban areas in Ghana according to Osei-Tutu and Adjei-Kumi (2002) has been characterised by high and ever-increasing cost for both residential and public buildings. The study traced the trend in the cost of Residential buildings for the past decade (1991-2001) with emphasis on input resources (materials, plant and labour). It goes further to identify the main cost-sensitive components in building construction based on their unit rates, to attract the attention of professionals during cost saving exercises. It identified internal and external factors which affect building cost increase to include over-dependence on imported building materials, non-utilisation of appropriate construction management techniques, defective implementation of housing policy by government, cost of land and lack of political will. It also identified factors which introduce variability into building cost to include project location, type of design or building, function, size of project, site location, date of tender and prevailing market conditions, local conditions of project site, inconsistency of measurement and pricing of works by Professionals, size and nature of building construction firm, method of Construction and others.

Chan and Park (2005) opined that cost is affected by a large numbers of factors because of the fact that construction is a multidisciplinary industry and its work involves many stakeholders. Thus, a project cost not only depends on a single factor but cluster of variables that are related to the characteristics of the project and to the construction team as well as the market conditions. The study in its concept identified the factors that contribute to project cost, and then constructed a regression model using the principal component technique to predict project cost in Singapore. The study identified three groups of variables which included characteristics of the project, contractors and owners/ consultants. From the groups of variables the study observed that special factors like high technology level, contractors specialized skills, public administered contract, contractors technical expertise, owners level of construction sophistication, and contractors financial management ability have significant effect on cost and hence used in the regression to provide a decision tool to estimate construction costs.

Windapo and Iyagba (2007) adduced the spiraling increase in housing construction cost in Nigeria to various factors. The study identified some economic factors considered as leading economic factors, which it used to develop a regression model to predict future level of housing construction cost in Nigeria. The study proposed building material price, property price, foreign exchange rates, labour cost, national disposal income and money supply as seven variables which are potential leading indicators of the level of housing construction cost. The study revealed that there exist a positive relationship between the housing construction cost in Nigeria and the proposed indicators but however only labour cost was reliably used to predict future level of housing construction cost. The study noted that if reliable estimates of the parameters are obtained the model could form a basis for explaining past movements and forecasting future movements in housing construction cost in Nigeria.

These studies have their short coming in that they generalised their studies to include both direct and indirect costs while focusing on economic, factor ignoring environmental, construction parties related factors and other factors specific to zones which can significantly affect the cost of construction in Nigeria.

Factors Affecting Construction Costs

Several essential factors have been reported to affect construction costs comprising direct and indirect costs, these include; 27 factors by Okpala (1988), 29 by Al-Khaldi (1990), 31 by Elinwa and Buba (1993), 13 by Hanafi (1995), and 42 essential factors by Al-juwaira (1997). Omion (2001) and American Institute of Architects (2007) also identified some factors which affect the cost of building. Memon et al. (2010) in a study of factors affecting construction costs in Mara large construction project identified 24 factors. The study concluded that cash flow and financial difficulties faced by contractors, contractor's poor site management and supervision, inadequate contractor experience, shortage of site workers, incorrect planning and scheduling by contractors are most severe factors while changes in scope of project and frequent design changes are least affecting factors on construction cost. Amusan (2011) in a very recent study of factors affecting construction cost performance in Nigerian construction sites also identified 23 factors called cost overrun determinants. The emphasis of this study is that these factors cause construction cost differential over place and time.

Hence this study identified all the essential factors observed by the past studies with the fact that they influence the direct costs components of building elements.

Study Area

According to Ministry of Education (2011) Cross River State lies between latitudes 4° 28' and 6° 55'North and longitudes 7° 50' and 9° 28' East of the Greenwich Meridian within the tropical rainforest belt of Nigeria with Calabar as its capital, named from the Cross River, which passes through it. The state which is one of the six states of the oil producing South- South zone, has a total area of 20,156km^2 and a population of about 2,888,966persons (Federal Republic of Nigeria, 2009). The State is composed of three major ethnic groups-these are the Efik, the Ejagham and the Bekwarra.

According to Ekpo (2004), the state has an annual rainfall of between 1300mm and 3000mm, with a temperature of between 15^{0}C and 23^{0}C. It's vegetation is mainly rain forest and mangrove swamps, especially in the coastal areas. Cross River State lies predominantly within the Cross River Basin which has a total area of 53,855 Km2 of which 44,105 Km2 lie in Nigeria and 9750 Km2 lie in Cameroon. The Cross River Basin also covers part of Benue, Abia, Ebonyi, Enugu and Akwalbom States in Nigeria. The topography of Cross River is mostly characterized by low-lying undulating terrain with several areas of extensive flood plain along the course of Cross River and its major tributaries. There are however, high elevations at the basement areas of the Oban massif and Obudu Plateau with the Obudu hills attaining heights of up to 1, 600m (Ministry of Education, 2011). The state is also endowed with such minerals as granite (especially around Akankpa), clay, sand, kaolite, basalt, limestone and others. The main occupations of the inhabitants of the area are farming and fishing (Ekpo, 2004).

Research Methodology

This study adopted the exploratory survey design approach and the data was obtained through extensive literature search, organised group discussion and the use of structured questionnaire involving a sample of 91 contractors and 46 consultants established using the Taro Yamane formula as stated by Udofia (2011). A random sampling from the established population through a pilot survey of the small and medium contractors as well as consultants involved in the execution of educational and administrative public buildings in the state was used. The valid questionnaires used were 88 and 44 for the contractors and consultants respectively. This study evaluates the severity of the impact of eighty factors on the dynamics of direct cost of building elements in the area. The factors comprise environmental, design, tendering, construction, finance, macro- economic, procurement and performance related factors.

The building elements considered are; foundation, floor, walls, roofs, doors and windows, finishes, and services. Data collected was analysed using mean item score, and Man Whitney U test from the SPSS package. To allow measurement of the effect of factors, a five point scale was adapted from Nkado and Mbachu (2002). The five point rating scale for the levels of influence ranged from No effect (1) to very high effect (5). The numbering values calculated by the above were then differently classified as can be seen in Figure 1, because a single point or number changing from 1-5 in questions does not symbolize each verbal scaling expression in the evaluation phase, since the results are obtained as decimal numbers instead of integers, a specific scale became necessary. Therefore the 5 scale expression was defined by the interval of 0.8. This was then used to determine the level of significance of the factors with 3.4 as a cut-off for high significance.

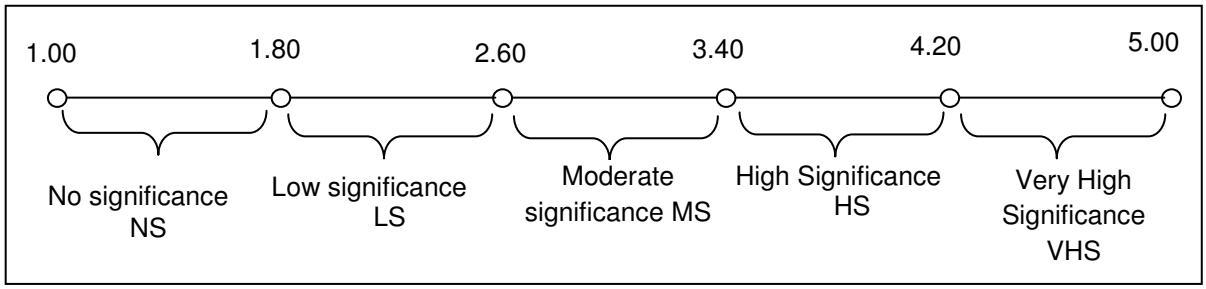

Figure 1: Evaluation Scale for level of significance
Adapted from Kazaz*et al*. (2008).

The ranking of the factors that significantly affect the dynamics of costs is determined based on the mean score of each item which was calculated by the following equation:

$$MS = \sum_{i=1}^{5}(R_{Pi}R_i)/n \quad ,(\ 1 \leq II \leq 5\ ) \text{.....Equation (1)}$$

(Where MS = Mean Score, R_{Pi}= Rating point i(range from 1-5),
R_i= response to rating point, i) and n = total responses = summation of Ri from1-5

Results and Discussion

The findings of the study are discussed as follows;

Evaluation of Contractors' Perception of Effect of Factors on Dynamics of Costs

In order to investigate the perception of contractors of the effect of factors on the dynamics of direct costs in the state, the consultants were asked to rate the 80 factors identified from literature according to the extent they perceive the effect of the factors on the changes of direct costs over place and time. Each factor in this case has a Mean item score which was calculated by the formula in equation (1). The result of the evaluation for the consultants' perception in the states is presented in Table 1

Table 1: Contractors and Consultants Perception of effect of factors on dynamics of costs in Cross River State

	Mean score of contractors	Rank	Mean score of consultants	Rank	Mean score	Rank	Remark
Incorrect planning	4.78	1	4.79	1	4.79	1	VHS
Construction methods	4.69	3	4.67	2	4.68	2	VHS
Site condition	4.75	2	4.57	4	4.66	3	VHS
Duration of Contract period	4.59	6	4.60	3	4.60	4	VHS
Poor financial control on site	4.52	8	4.55	5	4.54	5	VHS
Inflation	4.52	8	4.48	6	4.50	6	VHS
Additional work/ variation order	4.48	10	4.48	6	4.48	7	VHS
Interest Rates	4.65	4	4.26	14	4.46	8	VHS
Quality requirement	4.41	11	4.45	8	4.43	9	VHS
Floor area	4.41	11	4.38	9	4.40	10	VHS
Exchange Rates	4.59	6	4.19	16	4.39	11	VHS
Fluctuation of prices	4.38	14	4.31	12	4.35	12	VHS
Poor raw materials production in the	4.35	15	4.31	12	4.33	13	VHS
location of Site	4.31	17	4.26	14	4.29	14	VHS
High transportation cost	4.22	18	4.17	17	4.20	15	VHS
Poor supervision	4.21	19	4.17	17	4.19	16	HS
Number of floors	4.13	20	4.17	17	4.15	17	HS
Specification/design error	4.35	15	3.86	26	4.10	18	HS
Influence of foreign construction firms	4.06	22	4.12	20	4.09	19	HS
Previous experience of contractor	4.12	21	4.05	21	4.09	19	HS
Contractors Type/Size	3.71	28	4.36	11	4.04	21	HS
Productivity requirement	3.96	25	3.98	23	3.97	22	HS
Traditional method	3.98	23	3.88	24	3.93	23	HS
Problems of machinery maintenance	3.98	23	3.83	27	3.91	24	HS
Import duties and tariffs	4.60	5	3.19	51	3.89	25	HS
Fraudulent practices and kickbacks	3.51	37	4.02	22	3.76	26	HS
Economic Stability	3.72	26	3.79	28	3.76	27	HS
Health and safety requirement	3.68	30	3.76	29	3.72	28	HS

Average Storey Height	3.67	31	3.74	30	3.71	29	HS
Wage Rates	3.69	29	3.67	32	3.68	30	HS
Rework/ construction error	3.72	26	3.55	36	3.64	31	HS
Absence of Construction-cost data	3.53	35	3.69	31	3.61	32	HS
Bureaucracy in tendering method	3.61	32	3.60	34	3.61	33	HS
No of construction on going	3.56	33	3.64	33	3.60	34	HS
Client type	3.49	39	3.60	34	3.55	35	HS
Reliability of Cost Estimate	3.55	34	3.52	37	3.54	36	HS
Availability of materials	4.41	11	2.60	70	3.51	37	HS
Access to basic infrastructure	3.49	39	3.50	38	3.50	38	HS
Contract sum requirement	3.08	56	3.88	24	3.48	39	HS
Government policies (law and regulations)	3.46	41	3.43	41	3.45	40	HS
Contractual procedure	2.49	70	4.38	9	3.44	41	HS
Government finance	3.51	37	3.33	44	3.42	42	HS
Effect of weather	3.34	43	3.48	39	3.41	43	HS
type of services	3.46	41	3.33	44	3.40	44	HS
Formal private sector financed	3.31	45	3.45	40	3.38	45	HS
level of Waste generation on site	3.28	46	3.40	42	3.34	46	MS
Level of competition	3.33	44	3.29	46	3.31	47	MS
Construction management	3.19	48	3.36	43	3.28	48	MS
Poor coordination btw designers & contractors	3.27	47	3.26	48	3.26	49	MS
Labour unions activities	3.16	49	3.29	46	3.23	50	MS
Youth and community activity in the area	3.14	51	3.26	48	3.20	51	MS
Users requirement	3.12	53	3.21	50	3.17	53	MS
Effect of oil exploration	3.15	50	3.19	51	3.17	52	MS
Supplier manipulation	3.12	53	3.19	51	3.16	54	MS
Time lag between design & tendering	3.11	55	3.19	51	3.15	55	MS
Insurance cost	3.14	51	3.07	55	3.11	56	MS
Project management method	2.98	58	3.07	55	3.03	58	MS
Building type	3.01	57	3.05	59	3.03	57	MS
Public – private financed	2.91	60	3.07	55	2.99	59	MS
Management contracting	2.91	60	3.07	55	2.99	59	MS
Social and cultural impacts	2.95	59	2.90	62	2.93	61	MS
Informal private sector financed	2.85	63	2.95	60	2.90	62	MS
Direct labour method	2.88	60	2.88	65	2.88	63	MS
Money supply	2.68	65	2.93	61	2.81	64	MS
Relationship between management and . .	2.78	64	2.83	66	2.80	64	MS
Labour only method	2.68	65	2.76	67	2.72	66	MS
Developers/Contractors financed	2.67	67	2.74	68	2.71	67	MS
Level of IT utilization	2.49	70	2.90	62	2.70	68	MS
National Output: GDP	2.48	72	2.90	62	2.69	69	MS
Availability of machinery	2.52	68	2.64	69	2.58	70	LS
Design and build	2.51	69	2.55	71	2.53	71	LS
National disposable income	2.53	35	2.52	73	2.53	72	LS
Plan shape	2.48	72	2.43	76	2.46	73	LS
Natural Disaster	2.25	77	2.55	71	2.40	74	LS
circulation space	2.31	76	2.48	74	2.40	74	LS
Availability of labour	2.35	74	2.45	75	2.40	74	LS
Disputes on site	2.32	75	2.36	77	2.34	77	LS

Lack of productivity standard in the area	1.65	80	2.36	77	2.01	78	LS
Unemployment	1.87	78	2.05	79	1.96	79	LS
Consultants type	1.74	79	1.79	80	1.77	80	NS

Table 1 shows that, by the contractors' perception, incorrect planning ranked first with a mean score of 4.78, followed by site conditions and construction methods with mean scores of 4.75 and 4.69 respectively. Interest rates and import duties and tariffs ranked next with mean scores of 4.65 and 4.60 respectively, while duration of contract period and exchange rates both ranked sixth with mean scores of 4.59. The factors that ranked least were consultant types and lack of productivity standard in the area having mean scores of 1.74 and 1.65 respectively. Other factors between these extremes are shown in Table 2. The result is an indication that contractors perceive that stakeholders do not give enough attention to pre-construction planning, site related issues, the construction methods adopted for the various projects and macroeconomic issues in their project cost anticipation resulting in inaccurate cost forecast over places and time.

Evaluation of Consultants' Perception of Effect of Factors on Dynamics of Costs

In order to investigate the perception of consultants of the effect of factors on the dynamics of direct costs in the state, the consultants were asked to rate the 80 identified factors according to the extent they perceive their effect on the changes of direct costs over place and time. The result of the evaluation is presented in Table 1. The result shows that by the consultants' perceptions, incorrect planning and construction methods ranked first and second with mean scores of 4.79 and 4.67 respectively. Next in ranks are duration of contract period, site condition and poor financial control on site with mean scores of 4.60, 4.57 and 4.55 respectively. Inflation and additional work/ variation order both ranked next with mean scores of 4.48. The factors that ranked least were unemployment and consultants types having mean scores of 2.05 and 1.79 respectively. Other factors between these extremes are shown in Table 1. The results indicate that consultants perceive that stakeholders do not give priority to adequate planning during the pre-construction stages of the projects. Moreover, adequate consideration is not also give to the construction method, durations of project, cost control techniques and economic related issues during the cost anticipation stage.

Agreement between the Perceptions of Consultants and Contractors in the State

In order to ascertain whether or not the Consultants and Contractors have the same perception about the factors which influence the dynamics of direct cost the research hypothesis earlier stated was tested using Mann-Whitney U test at $p \leq 0.05$ since the measurement were obtained on ordinal or ranking scale. The rule for the rejection or acceptance of the hypothesis is that if p-value > 0.05, the test accepts the hypothesis but if p-value ≤ 0.05, the test rejects the hypothesis. The results are presented in Table 2.

Table 2: Results of Mann Whitney U test

	stakeholders	N	Mean Rank	Sum of Ranks
perception	consultants	80	81.43	6514.00
	contractors	80	79.58	6366.00
	Total	160		
		Average	Sig. value	Decision
Mann-Whitney U		3126.000		
Wilcoxon W		6366.000		
Z		-.253		
Asymp. Sig. (2-tailed)		.801	0.05	accept

Grouping Variable: stakeholders perception

The result of the Mann Whitney U test presented in Table 2 shows that a p-value of 0.801 > 0.05 implies acceptance of the hypothesis that there is no significant difference between the perception of consultants and contractors concerning the effect of factors responsible for cost dynamics in the state. This implies a high level of agreement between the perception of consultants and contractors

concerning the level of effect of the factors on the differential of direct cost of building elements in Cross River state.

The Significant Factors Contributing to Cost Dynamics of Building Elements

In order to determine the factors which have very significant influence on the dynamics of direct costs in the state, the mean values of the scores of the contractors and consultants perception were calculated since it had been established that there is strong agreement between them. The result which is also presented in Table 1 shows that, the factors which rank first to fifteen were found to have very high significance with regard to their effect on the dynamics of direct costs of building elements. Incorrect planning, construction methods and site condition ranked first, second and third, with mean scores of 4.79, 4.68 and 4.66 respectively. Duration of Contract period, Poor financial control on site and inflation ranked fourth, fifth and sixth, with mean scores of 4.60, 4.54 and 4.50 respectively. Additional work/ variation order, Interest Rates, Quality requirement ranked, seventh, eighth and ninth with mean scores of 4.48, 4.46, and 4.43 respectively. Floor area, Exchange Rates, Fluctuation of prices and Inadequate production of raw materials by the country, ranked tenth, eleventh, twelfth and thirteenth with influence mean scores of 4.40, 4.39, 4.35 and 4.33 respectively, while location of Site and High transportation cost ranked last among the very high significant factors with mean scores of 4.29 and 4.20. 29 other factors fell within the high significance, while 36 factors fell outside the cut- off point of 3.4 for high significance.

Conclusion and Recommendations

The study has established that the differential of direct costs of building element over place and time in Cross River state is caused by different internal and external factors. The result is an indication that stakeholders who are charged with the responsibility of cost advice and management have not adequately taken into consideration the nature and causes of direct cost dynamics so as to accommodate the cost differentials over projects. The study observed that the stakeholders who are more involved in direct cost management share almost the same opinion concerning the causes of the cost dynamics in the state. The conclusion from these results is that site condition, method of construction, some macroeconomic indices and the general construction planning have a very high significant effect on the changes of direct costs over place and time. The study therefore recommends that stakeholders should give adequate priority to the site condition, method of construction, macroeconomic indices and cost control mechanism through effective planning. Keeping of accurate data on the rate of change in the factors is therefore advocated. This will reduce the consequences of project cost failure and client dissatisfaction in the state and Nigeria in general.

References

Achuenu, E. (1999). An Elemental Approach to the Evaluation and Modelling of Cost Overrun of Public Office Building Projects in Nigeria. Unpublished Ph.D Thesis (Construction Management) Department of Building, University of Jos. Nigeria.

Achuenu, E. and Ujene, A. O. (2006).Evaluation of Labour and Material Costs in Building Elements in Nigeria. *Nigerian Journal of Construction Technology and Management. 7(1):* 99-110, *October.*

Al- Juwairah,Y.A (1997**).** Factors Affecting Construction Cost in Saudi Arabia. Unpublished Master Thesis, King Fahd University of Petroleum and Minerals, Saudi Arabia. Retrieved from; http://eprints.kfupm.edu.sa/10044/ *on* 26/05/2011.

Al- Khaldi, Z. S. (1990**).** Factors Affecting the Accuracy of Construction Cost Estimating in Saudi Arabia. Unpublished Master Thesis, King Fahd University of Petroleum and Minerals, Saudi Arabia. Retrieved from; http://eprints.kfupm.edu.sa/10083/ on 26/05/2011.

American Institute of Architects (2007). Factors Affecting Building Costs Excerpted and adapted from *The Architect's Handbook of Professional Practice,* 13th edition Revised February.

Amusan, L.M. (2011). Study of Factors Affecting Construction Cost Performance in Nigerian Construction Sites. Unpublished article, assessed from: http://eprints.Covenant university. edu.ng/121/1/COST_PERFORMANCE2.doc, date assessed 28/05/2011.

Ayeni, J. O., *Principles of Tendering and Estimating*. (2nd ed.), Lagos: Builders Magazine, 1997.

Chan, S. L. and Park, M.(2005).Project Cost Estimation using principal component regression. *Construction Management and Economics*, 23(3), 295-304.

Chitkara, K. K. (2006). *Construction Project Management, Planning, Scheduling andControlling*. 11th ed., New Delhi :Tata McGrawhill Publishing Company Limited.

Cheung, F.K. T. (2005).Development and Testing of a Method for Forecasting Prices of Multi-Storey Buildings during the Early Design Stage: the Storey Enclosure Method Revisited. Unpublished PhD Dissertation presented to the School of Construction Management and Property, Queensland University of Technology.

Duncan, (1996).*A Guide to the Project Management Body of Knowledge*, Project Management Institute.

Ekpo, U. (2004).*The Niger Delta and Oil Politics*. Lagos: International Energy Communications limited, pp.5-60.

Elinwa, U. and Buba, S. (1993). Construction Cost Factors in Nigeria. *Journal of Construction Engineering and Management*.119(4): 698-714.

Federal Republic of Nigeria (2009). Federal Republic of Nigeria Official Gazette, Report on the Census 2006 Final Results, 96(2): B1-B3, February 2.

Ferry, D. J and Brandom, P. J. (1991).*Cost Planning of Buildings,* London: B and P Professional Books, p.270.

Hanafi, A. A. (1995). Contractor Sectors-Problem and Solution.*AL-Aswaq Magazine. Saudi Arabia.* 7: 16-17.

Johannes, J.M., Koch, P. D and Rasche, R. (1985). Estimating Regional Construction Cost Differences: Theory and Evidence. *Managerial and Decision Economics (pre-1986);* June; 6, 2; ABI/INFORM Global pg.70.

Juodis, A. and Stalioraitis, P. (2006).The Analysis of Statistical Characteristics of Construction Costs. *Foundation of Civil and Environmental Engineering .8*:60-71.

Kazaz, A., Manisali, E. and Ulubeyli, S. (2008) Effect of Basic Motivational Factors on Construction Workforce Productivity in Turkey, *Journal of Civil Engineering and Management*, 14(2) :95-106.

Memon, A. H., Rahman, I. A., Abdullah, M. R and Abdu Azis, A. A. (2010). Factors Affecting Construction Cost in Mara Large Construction Project: Perspective of Project Management Consultant. *International Journal of Sustainable Construction Engineering & Technology, 1*(2):41-54.

Ministry of Education (2011).Cross River State Education Policy Final Draft, Ministry of Education Headquarters, Calabar, Cross River State.

Nkado, R. N. and Mbachu, J. I. C. (2002). Causes of, and solutions to client dissatisfaction in the South African building industry: The clients perspectives, 1st CIB W107 International Conference, Stellenbosch, South Africa, 11-13 October, *CIB W107 1st International Conference: Creating a Sustainable Construction Industry in Developing Countries,* October: pp 349-357

Ogunsemi, D. R. and Aje.I.O. (2006). A Model for Contractors' Selection in Nigeria, *Journal of Financial Management of Property and Construction*, 11(1): 33-44.

Ogunsemi, D.R and Jagboro, G.O. (2006). Time-Cost Model for Building Projects in Nigeria. *Journal of Construction Management and Economics*, 24: 253-258.

Okpala, D. C. (1988).Causes of High costs of Construction in Nigeria. *Journal of Construction Engineering and Management*. 114(2): 233-245.

Omion, E. (2001). Factors that Contribute to Cost of Building Projects in Nigeria. Real-Estate/Building-a-Home.Retrieved from: http://EzineArticles.com/?expert=Emmanuel_Omion.Date assessed: 24/05/2011.

Oyewobi, L. O., Ibironke, O. T., Ganiyu, B. O. and Ola-Awo,A. W. (2011).Evaluating Rework Cost-A Study of Selected Building Projects in Niger State, *Nigeria Journal of Geography and Regional Planning* 4(3): 147-151, March.

Osei-Tutu, E. and Adjei-Kumi, T. (2002). The cost Trend of Residential Housing Provision in Urban Areas of Ghana from 1991-2001. Building and Road Research Institute (BRRI), CSIR, Kumasi. An Unpublished Paper Retrieved from; http://www.auhf.Okeiweb.com/..../ ghana/construction-in-ghana.html. Date assessed: 20/05/2011.

Scottish Government Report (2004). Analysis of Historical Construction Cost Movements in Scottish Social Housing - Final Report Scottish Government, June.

Udofia, E. P. (2011) *Applied Statistics with Multivariate Methods*, Enugu, Nigeria: Immaculate Publication Limited, p.258

Ujene, A.O. (2011). Dynamics of Direct Costs of Building Elements in South-South of Nigeria, A Phd Seminar Presented in Department of Building, University of Uyo, Nigeria.

Warsame, A. (2006a). Supplier Structure and Housing Construction Costs. A Paper Presented in the Annual Report of Royal Institute of Technology, Stockholm. Report 5:73. http://*www.kth.se/polopoly_fs/1.19801!73_thesis.pdf*

Warsame, A. (2006b). Long run relationships, Vertical Integration, and International Competition. Can they Contribute to Explaining Regional Cost Differences?. A Paper Presented in the Annual Report of Royal Institute of Technology, Stockholm. Report 5:73http://*www.kth.se/polopoly_fs/1.19801!73_thesis.pdf*.

Windapo, A. O. and Iyagba, R. O. A. (2007).*Modelling the Determinants of Housing Construction Costs in Nigeria*. The Construction and Building Research Conference of The Royal Institution of Chartered Surveyors, Georgia Tech, Atlanta USA, 6-7 . September.