

Political Variants Affecting Indirect Cost of Construction Projects in the Niger Delta Region of Nigeria

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ABSTRACT:- Seven political variants were identified and investigated on to determine their indirect cost effect on the cost of construction projects in the Niger Delta Region of Nigeria. The investigation was however done with a review of works earlier done on cost of construction as secondary source, followed by the administration of structured questionnaire to a randomly selected respondents from a population of contractors and consultants who were executing mega projects in the Niger Delta region of Nigeria. The sample size was determined using the Taro Yamene (1967) population sample size formula. Responses were analyzed using the mean score and spearman correlation coefficient R to determine the level of significance of each variant. The questionnaire distributed was based on the Likert Scale. Results obtained using the mean score and spearman correlation coefficient (R), showed various levels of significance of political variants on the indirect cost of construction projects in the Niger Delta Region of Nigeria. Specifically, the R values for the variants tend to be +1 while the MS are all above 2 which is an indication that there is significant influence of the political variants on the indirect cost of construction projects in the Niger Delta Region of Nigeria.

Key words: Political variants, Contractor, Consultant, Top Management, Selection, Cost of Construction etc.

I. Introduction

The Niger Delta Region is the largest wetland in Africa, with a surface area of almost 20,000 square km and the 3rd Largest Mangrove forest in the world covering about 60% of the ^[15]. This fact was also corroborated by en.m.wikipedia.org/wiki/Environmental_Issues_in_the_Niger_Delta ^[16].

The region is habited by a total population to be about 32 million people, Population Census Data 2006 and is projected to be about 50 million by 2017 ^[16]. The nature of the area makes it unique to require special attention when formulating and planning developmental projects for the region. This ascertain is in line with the pronouncement of a commission of Inquiry, known as the Willink's Commission of Inquiry, set up by the federal government of Nigeria, to find out the possibility of rapidly developing the region. After carrying out their initial investigations of the region, the commission described the area as follows: the needs of those who live in the creeks and swamps of the Niger Delta region are very different from those of the interior and that it is not easy for a government or legislature operating from the inland to concern itself or even fully understand the problems of the territory, where communication is so difficult, buildings so expensive and education so scanty..." This, according to the commission is what lead to a total neglect of the region ^[15].

From the foregoing, there is need to undertake a research to find out the factors affecting construction project cost in the region.

It has been observed that the over dependence of the economy on oil has significantly impacted on the cost of construction projects in the Nigeria Delta in particular and Nigeria in general. The drift from the real sector of Agriculture and solid minerals affected the economy and the living standard of living of the people in the country and this has resulted to inflation and low gross domestic product impact.

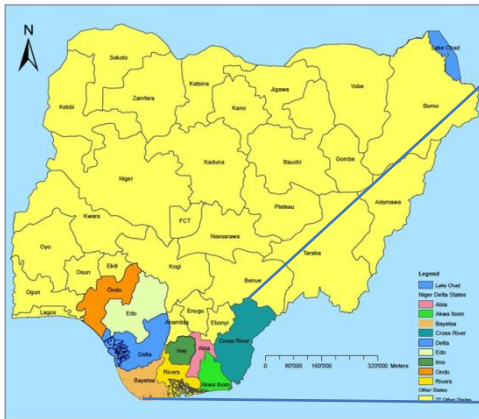


Figure 1a; Map of Nigeria

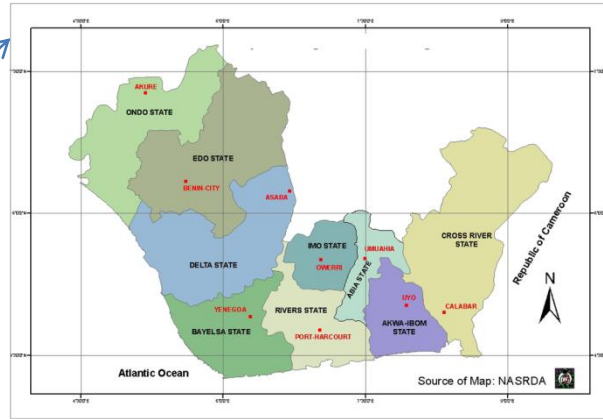


Figure 1b; Map of Niger Delta Region under study

II. Literature Review

Cost of construction is classified as direct and indirect. The works of [1], [2], [3], [4], [5] and [6] have x-rayed the various variables of cost in construction projects. Importantly this discourse is dwell on the indirect aspect of cost which can be considered highly significant but not contributing a direct consequence to the cost of construction which is classified as the indirect cost or influence on cost of project construction in the Niger Delta Region of Nigeria. Political factor has the variables such as selection of consultants/contractors, award of contract, conception/selection of projects; government policies and influence on top management, all of these are classified as macro variants affecting the cost of construction of infrastructural projects in the Niger Delta Region of Nigeria.

In the study of [7], on significant causes and effects of project delays in the Niger Delta Region of Nigeria, It was identified that cost of construction projects was indirectly affected by: interference with project performance by top management staff of the client's establishment; wrong choice of consultant and contractors as vendors; slow decision making process (bureaucracy).

The indirect cost of construction projects according to [8] is attributable to government policies which showed that price fluctuation as a major cause of project cost escalation in the Niger Delta Region of Nigeria. They further opined that the limitation of the exchange rate affects construction material prices and the general price level. This was however, corroborated by [9] that the unstable inflationary trend in Nigeria and sub-Saharan Africa in general results from demand exceeding the supply thus, creating scarcity of goods which leads to escalation of cost of goods and services. The aftermath's effect is difficulty in the projection of construction cost.

[10] in their view stated that poor contract management is attributed to the manner in which contracts are awarded to the lowest bidder, who lacks managerial skills and does not have regard for contract plans, cost control, overall management and resource allocation. Glaringly the above shows that they are chosen not because of competence but on grounds of political influences. This fact was clearly stated by [9] that, in Nigeria, contracts are usually awarded to politicians and well-connected individuals irrespective of the apparent deficiencies in their relevant delivery potentials.

In this vein, [11] and [12] observed that most contractors in the sub-Saharan Africa are entrepreneurs whose interest is in making profit at the expense of good management. In the view of [12], these set of contractors, pay low wages, submit very low bids and have little or no ability to plan and co-ordinate contracts because they are mere entrepreneurs. Selection of projects/sites or location often times than not results to changes in site conditions. This according to [13] sited by [9], is caused by inadequate feasibility studies before project authorization. The study showed that political insensitivity and exploitation of resident communities contribute greatly to change in site conditions, resulting to stalling of project development that emanate from protests and repression of affected communities or regions faced by neglect and environmental disasters.

III. Methodology

This work is to determine the effect of some basic political variants affecting construction cost in the Niger Delta of Nigeria. In doing so, a basic research question was postulated which is expressed as follows; what is the political influence on the construction cost of infrastructural development projects in the Niger Delta Region of Nigeria. A research hypothesis was set as: there is no significant effect due to political influence on the cost of construction projects in the Niger Delta Region of Nigeria. Data were collected through the administration of questionnaire, interviews, discussion and intensive review of previous works that are related. The questionnaire were structured using the Likert five point scale of 5,4,3,2 and 1 representing highly significant, very significant, quite significant, significant and not significant respectively. Contractors and Consultants were randomly sampled. These Contractors and Consultants were those working on infrastructural development projects, in the Niger Delta Region (NDR). Sample size was determined using the Taro Yamene ^[14] formula, as follows:.

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

Where n = sample size
 N= population sample
 e = margin of error usually ranging 0.05 (5%)

Data were collected through questionnaire. The questionnaire was prepared in two parts. Part 1 includes data like general information on the respondent's profession; cognate experience in the construction industry. Part 2 was planned in a given way that respondents were either to accept or reject the hypothesis concerning the political influence and its variables that affect the cost of construction of infrastructure projects in the Niger Delta Region of Nigeria. Data collected in the study were analyzed using mean score, frequencies and the percentage to determine the degree of significance of each variable as a political factor affecting the cost of construction. The mean score index was adopted in testing the hypothesis, which is expressed as;

$$Ms = \frac{\sum fx}{\sum f} \quad \dots\dots\dots 2.$$

Hypothesis is further tested using the spearman's rank correlation coefficient and the student test at 0.05 level of significance. The formula are;

Spearman's correlation coefficient: $\gamma = 1 - \frac{6 \sum d_i^2}{n(n^2-1)} \quad \dots\dots\dots 3.$

Student test: $t = \frac{\gamma \sqrt{n-1}}{\sqrt{1-\gamma^2}} \quad \dots\dots\dots 4.$

The above is used on the political variables to determine the correlation of the cost of construction projects in the Niger Delta..

IV. Results and Discussion

Table 1; Analysis of Questionnaire distributed;

Description	No. issued	No. returned	% returned
Contractors	50	35	35
Consultant	60	45	45
Total	100	80	80

Table 1 shows the analysis of the distribution of questionnaire and the responses. A total of 110 questionnaire were distributed to contractors and consultants executing mega projects in the Niger Delta Region of Nigeria; which were contracts awarded by the Niger Delta Development Commission. The response showed that 35 and 45 of the contractors and consultants respectively responded, and this represented a total of 80 respondents, out of the 110 copies of the questionnaire, based on the sample size earlier obtained from the Taro Yamene ^[14] formula.

Table 2: comparative analysis of responses from contractors and consultants;

Likert Scale (x)	Contractor		Consultant	
	f	Σfx	f	Σfx
5	0	0	0	0
4	5	20	6	24
3	9	27	10	30
2	11	22	15	30
1	10	10	14	14
Σ	35	79	45	98
Ms	2.26		2.18	

Table 2 shows a comparative analysis of response from the contractors and consultants. The response showed significance level of influence on the indirect cost of construction projects in the Niger Delta Region of Nigeria due to political variants. Their responses potent the fact that they are skeptical since the questionnaire was dovetailed to finding out how they got the contract, either constructing or design. Conclusively, there is, established a fact that the political variants indirectly affect the cost of construction projects in the Niger Delta Region of Nigeria.

Table 3; Mean score of responses and Ranking of Political variants.

Political Variables/variants	Mean score	Ranking
Influence of politicians on top management	4.27	1
Conflict within top management	3.05	2
Government policies	2.29	3
Selection of contractors	2.11	4
Conception and selection of projects	2.05	5
Mode of award of contract	2.01	6
Selection of consultants	1.37	7

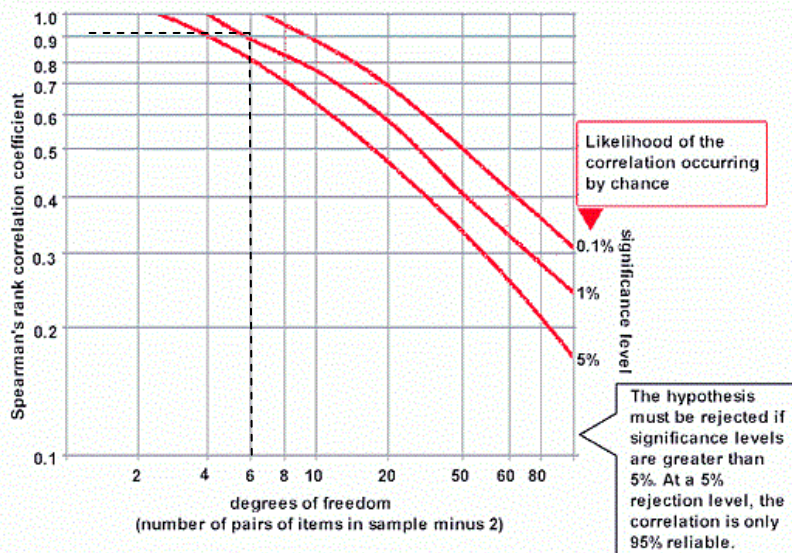


Figure 2; The significance of the spearman's rank correlation coefficients and degrees of freedom.

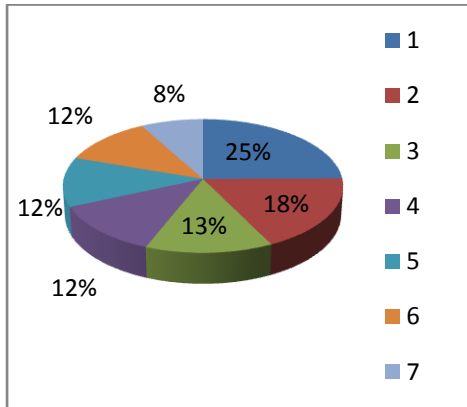


Figure 3; Pie Chart of Political Variants on the indirect cost of construction projects.

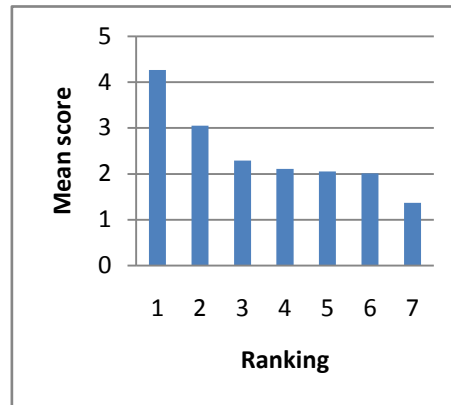


Figure 4; Bar Chart of Political Variants on the indirect cost of construction projects.

The above table shows the mean score analysis and ranking of the political variants. The responses indicated that there is very significant indirect influence on the cost of construction. Influence of politicians on top management is rated 1 with a mean score of 4.27, followed by conflicts within top management rating as 2 with a mean score of 3.05. The rest variants ranged between near significant to slightly above significant using the likert scale. This result explains a crucial fact that the respondents who are the beneficiaries would tend to rate their involvement lower than how they rate the Government/politicians. Figure 2 above shows an analysis of the variants using the spearman's correlation coefficient with a R value of 0.86 and a t_{cal} value of 5.63. Figure 3 and 4 show the degree of influence of the variants affecting the cost of construction projects which are represented in a pie and bar charts. These charts also displayed a correlation with the figure 2 of the spearman graph. Each variant has varying level of influence on the cost of construction projects indirectly.

V. Award of contract

Table 4; Spearman's correlation coefficient for contractors and consultants;

Likert scale (x)	Contractors			Consultants			d	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	0	0	5	0	0	5	0	0
4	5	20	4	3	12	4	0	0
3	7	21	3	8	24	2	1	1
2	11	22	2	17	34	1	1	1
1	12	10	1	17	17	3	-2	4
Σ	35	73		45	87			6
Ms	2.09			1.93				

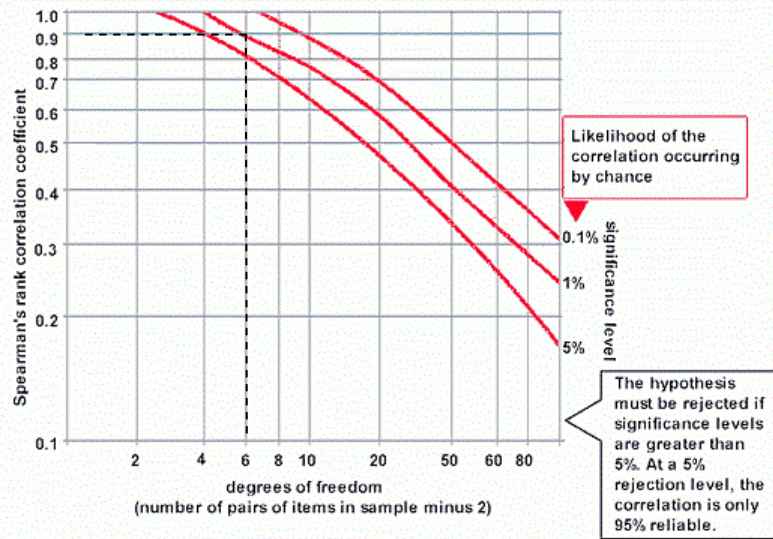


Figure 5; The Significance of the Spearman's rank correlation coefficients and degrees of freedom for Award of Contract

The contractors and consultants perception on influence of political variants on award of contract to the indirect cost of construction in the Niger Delta Region is shown in table 4 above. Glaringly, the views are closed but the dispersion is arising mainly due to the fact that none is willing to accept in fairness on the grounds for which they were awarded the contracts or commissioned to carry out a study, design, or superintend the projects. In all responses; They seem not to allude to the fact that contracts awarded were based on political influence. Aside from this observation, statistically, the spearman correlation coefficient gave (R) value of 0.9 which is closed to +1 indicating a significant relationship between the participant's responses to the five points likert scare. Further analysis gave a student test value of 6.97 which is greater than the table value at 0.05 level of significance. The mean score value (Ms) showed values of 2.09 and 1.93 respectively for the contractor and consultant which gave a mean of mean scores of 2.01. This variant showed significant influence on the indirect cost of construction projects in the Niger Delta Region of Nigeria. The figure or graph of spearman's correlation coefficient depicts the degree of relationship between the variant and the ranking.

VI. Selection of Contractors/Consultants.

Table 5; Selection of contractors/consultant

Likert scale (x)	Contractors			Consultants			d	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	0	0	5	0	0	5	0	0
4	4	16	4	5	20	4	0	0
3	6	18	3	8	24	2	1	1
2	12	24	2	16	32	1	1	1
1	13	13	1	16	16	1	0	0

Σ	35	76		45	92			2
Ms	2.17			2.04				

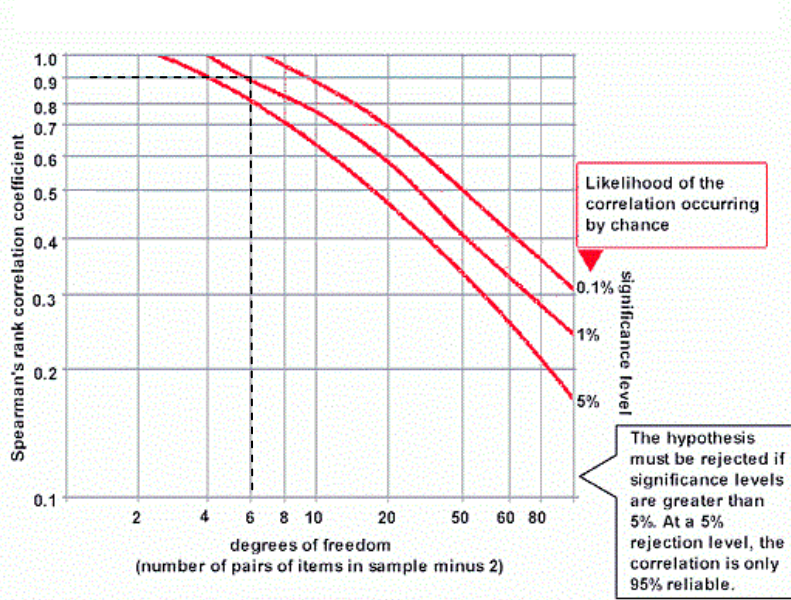


Figure 6; The significance of the spearman's rank correlation coefficients and degrees of freedom for selection of contractors/consultants.

Development projects are sometimes awarded following political influence or directives. Consequent upon this, contractors are chosen not based on expertise or know-how. The attendant effect is that there occur project time overrun, cost overrun and sometimes compromise of the quality of work. The conurbation of these results to cost of construction.

Projects conceived for execution are normally studied and designed. Therefore, the selection of consultants must equally be thorough. Proper evaluation of the experiences of the consultants be carried out through diligent application of due process and following the procurement act of 1997. The use of inexperienced consultants for design of development projects lead more often than not to poor finished products and leads to alteration on site that is generally considered as change in scope or variation resulting to increase in the cost of construction. Therefore, there should always be a proper evaluation of expression of interest (EOI) of both the consultant who designs and superintends as well as the contractor who is meant to execute the project, for their technical and financial bids before consideration. Table 5 above shows a mean score of response from both contractors and consultants calculated to be 2.11 which is significant as a variant affecting the indirect cost of construction projects. The spearman's correlation coefficient gives a value of 0.9 and a t_{cal} value 6.97 of which also predicts a high level of relationship between the responses and ranking.

VII. Conception/Selection of Projects

Table 6; Spearman correlation coefficient for contractors and consultants

Likert scale (x)	Contractors			Consultants			d	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	0	0	5	0	0	5	0	0
4	4	17	4	2	8	4	0	0
3	6	18	3	9	27	2	1	1
2	13	27	2	23	26	1	1	1
1	12	14	1	11	11	1	0	0
Σ	35	76		45	72			2

Ms	2.06		2.04		
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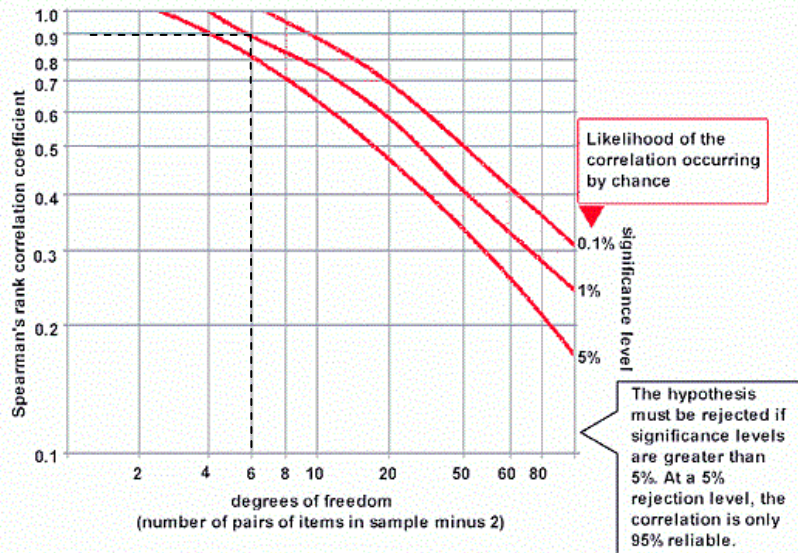


Figure 7; The significance of the spearman's rank correlation coefficients and degrees of freedom for conception/selection of project.

Project conception and selection are in most cases do not meet the yearnings of the people for which they are meant for. This often times is attributed to the fact that those conceiving and selecting the projects are from the political sector. Projects are chosen to suit personal satisfaction without a proper need assessment carried out with the stakeholders of the project. As a result, the project may face several risks that could increase the cost of construction. This variant significantly affects the cost of construction because ill-conceived project may attract change in scope or relocation to another site that require other works to be done before proper execution of the project. Table 6 shows the mean of the responses from contractor and consultant. The mean of means were computed to be 2.05 which depicts the level of significance. The spearman's correlation coefficient showed R value of 0.9 and t_{cal} value of 6.97 indicating a perfect correlation.

VIII. Government Policies

Table 7; Spearman correlation coefficient for contractors and consultants

Likert scale (x)	Contractors			Consultants			d	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	0	0	5	0	0	5	0	0
4	5	20	2	15	60	2	0	0
3	7	21	4	9	27	3	1	1
2	8	16	3	5	10	4	-1	1
1	15	15	1	16	16	1	0	0
Σ	35	72		45	113			2
Ms	2.06			2.51				

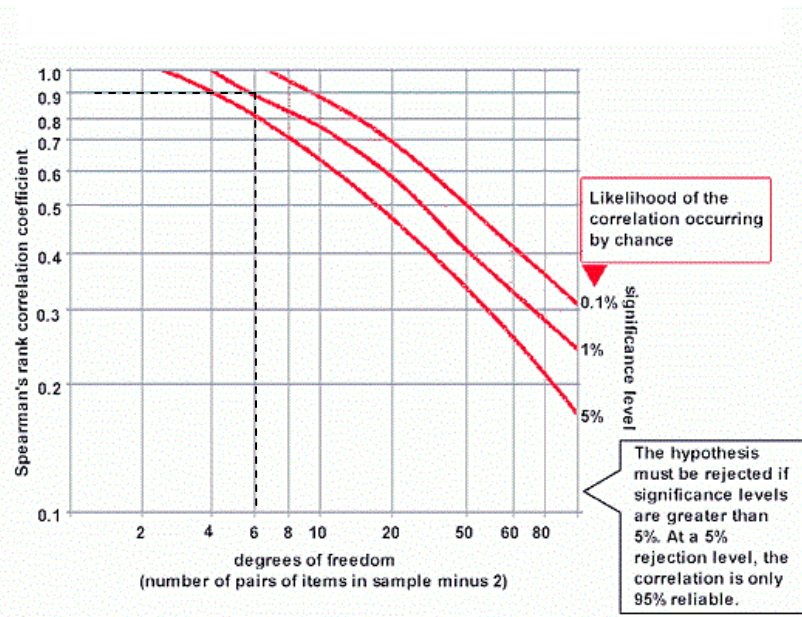


Figure 8; The significance of the spearman's rank correlation coefficients and degrees of freedom for Government Policies.

Governance is a continuum, hence change is eminent. However, each change in government brings about different policies and ideologies. These policies affect a project under construction positively or negatively. It may lead to abandonment or review of scope and or increase in the cost of the project. Responses from both contractors and consultants have a mean score of 2.29, which indicates the level of significance of government policies affecting indirectly the cost of project construction. This result is clearly shown in table 7 above. However, the figure 8 showed that the R value of 0.9 is slightly above the 0.05 level of significance and has t_{cal} value of 6.97 which shows a good relationship between the scale and responses from the contractors and consultants.

IX. Influence on Top Management

Table 8; Spearman correlation coefficient for contractors and consultants

Likert scale (x)	Contractors			Consultants			d	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	20	100	1	18	90	2	-1	1
4	10	40	2	20	80	1	1	1
3	3	9	3	4	12	3	0	0
2	1	2	4	2	8	4	0	0
1	1	1	4	1	1	5	-1	1
Σ	35	152		45	191			3
Ms	4.34			4.20				

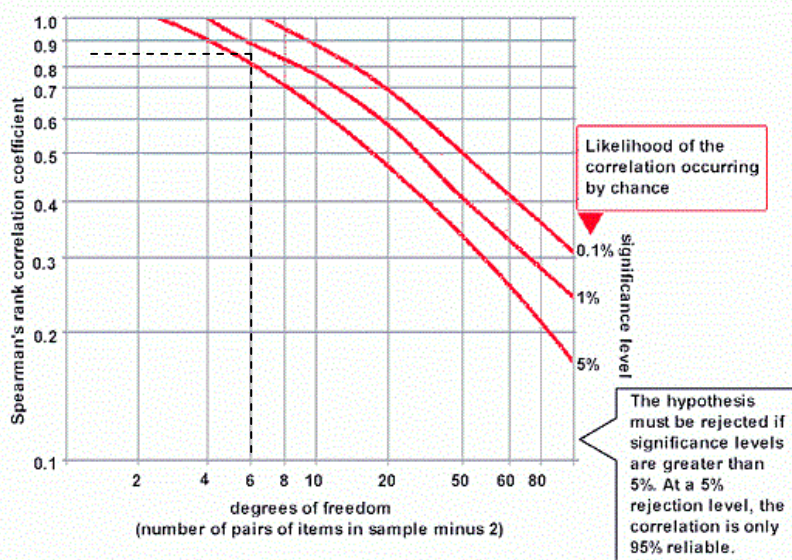


Figure 9; The Significance of the Spearman's rank correlation coefficients and degrees of freedom for influence of politician on top Management

There is tremendous influence on top management in the decision of whom to be selected as a contractor, consultant and where projects are to be sited. This attitude contributes largely to increase in the cost of projects to benefit the chief proponent of the project in his or her local government of origin. The corresponding effect is that in most cases than not, projects suffer time overrun leading to fluctuation in later days, cost overrun and sometimes abandonment. Table 8 above shows the responses of contractors and consultants with mean score values of 4.34 and 4.20 respectively with a mean of mean scores of 4.27 which indicates a very high level of significance as compared with the likert scale used in this study. Figure 9 also showed this level of relationship since the strength R which is about 0.87 with a t_{cal} value of 5.90 at 0.05 level of significance indicating that the paired variables (which are the scaling and responses) are predictable to the influence on top management by politicians.

x. Conflicts within management.

Table 9; Spearman correlation coefficient for contractors and consultants

Likert scale (x)	Contractors			Consultants			D	d ²
	Frequency of Response (f)	(fx)	Ranking	Frequency of Response (f)	(fx)	Ranking		
5	2	10	4	21	105	3	1	1
4	3	12	3	4	16	4	-1	1
3	13	32	2	5	15	3	-2	4
2	17	34	1	10	20	2	0	0
1	0	0	5	5	5	5	0	0
Σ	35	88		45	161			6
Ms	2.51			3.58				

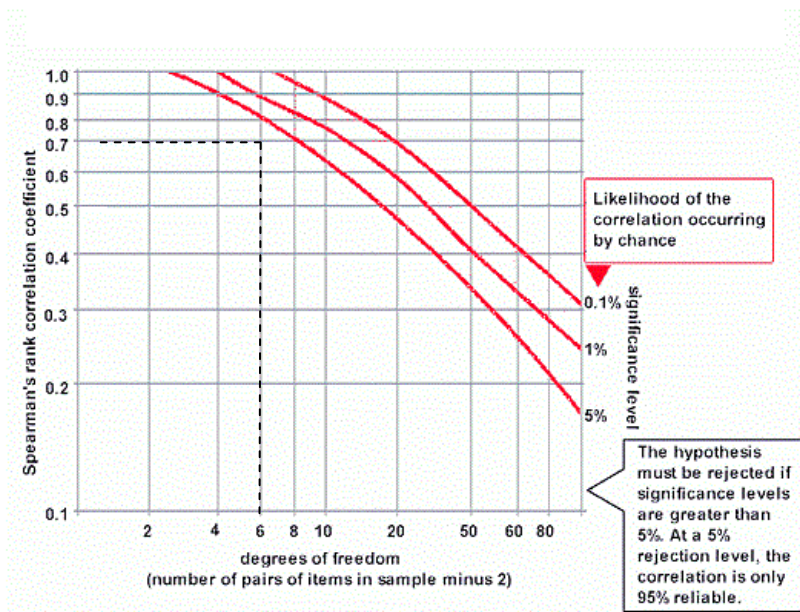


Figure 10; The significance of the spearman's rank correlation coefficients and degrees of freedom for Conflicts within Management.

The determination of the choice and location of a particular project brings conflict amongst top management. This is quite prevalent in the Niger Delta Region because of the impoverished nature of the region. Accordingly, there is scramble for projects to be sited by politicians in their locality, basically to gain recognition by the people. This most times lead to conflict amongst top management and members of various boards, thus indirectly affect the cost of construction projects. The conflict may lead to delay in payment of a properly executed project and sometimes attracts fluctuation of cost. The data shown in table 9 on the spearman's correlation gave R value of 0.7 with a t_{cal} value of 3.13 and the Ms of 2.51 and 3.58 respectively for the contractor and consultant. The cumulative response showed quite significant level of effect on the indirect cost of construction projects.

XI. Conclusion

The hypothesis H_0 , that the political variants have no significant influence on the indirect cost of construction project should be rejected.

The alternative H_a , that the political variants have significant influence on the indirect cost of construction should be accepted.

Government policies and influence on top management in the choice, selection of projects, consultants and contractors have been identified to have very significant effect on the indirect cost of construction projects in the Niger Delta Region.

Other political variants are significant from both the Ms and spearman's correlation coefficient analysis. The spearman correlation coefficient R also showed positive association and determines the strength of relationship between the paired variables.

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References

- [1]. Bill Manfredonia, C. P. E, Joseph P. Majewaki, R. and Joseph J. Perryman (2010). Cost Estimating, Whole Building. *Design Guide (WBDG) – a program of the National Institute of Building Science U.S.*
- [2]. Amusan, L. M. (2011). Study of Factors Affecting Construction Cost Performance in Nigerian Construction Sites. *Unpublished Article, assessed from <http://eprints.covenantuniversity.edu.ng/>*
- [3]. Azhor, N., Farooqui, R. U. and Ahmed, S. M (2008). Cost Overruns Factors in Construction Industry of Pakistan. *First International Conference on Construction in Developing Countries (ICCIDC-1) Advancing and Integrating Construction Education, Research and Practice “Karachi Pakistan”*.
- [4]. Ujene, A. O; Idoro, G. J and Mbamali I. (2012) Factors Influencing Direct Costs Dynamics of Building Projects – *Team members*
- [5]. Ayeni, A. A and Jagboro, G. O. (2002). The effect of Construction Delays on project delivery in the Nigerian Construction Industry. *International Journal of Project Management* 20, 593 – 599.
- [6]. Achuen, 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.
- [7]. Sunjka, B. P. and Jacob, U. (2013). Significant causes and Effects of Project delays in the Niger Delta Region. *SAIIE proceedings, Stellenbosch, South Africa*.
- [8]. Omoregie, A, and Radford D. (2006). Infrastructure Delay and cost Escalations: Causes and Effects in Nigeria, *School of Architecture, De Montford University Leicester, LE 19BH England*.
- [9]. Arain, F.M and Pheng, L. S. (2007). Causes of Discrepancies between Design and Construction. *Architectural Science Review* 47 (3), 237-249.
- [10]. Frimpong, Y., Oluwoye, J. and Crawford, L. (2003). Causes of Delays and cost overruns in Construction of Ground water projects in Developing Countries. *Ghana as a case study. International journal of project management* 21, 321 – 326.
- [11]. Haruna, M., Yahaya, I. and Ahmed, I. (2011). On the accuracy of Cost estimates: *Proceeding of the WABER 2011 Conference. Vol. 2 Pg. 761s*
- [12]. Haruna, M. (2011). Yahaya Makarfi Ibrahim and Ahmed Doko Ibrahim On the accuracy of Cost Estimates Identifying flows in Bills of Quantities for Building Projects in Nigeria Pg. 761 Vol. II
- [13]. Odunsami, K. T. And Onkwube, H. N. (2008). Factors affecting the accuracy of pre-tender cost estimate in Nigeria. *In the Construction, Building and Real Estate Research Conference of the Royal Institution of Chartered Surveyors. Held at Dublin Institute of Technology, 4-5 September 2008*.
- [14]. Taro, Y. (1967). *Statistics: An Introductory Analysis 2nd Ed., New York: Harper and Row*.
- [15]. en.m.wikipedia.org/wiki/Environmental_Issues_in_the_Niger_Delta (2014)
- [16]. PeterGangas, C. and Kulomri, J. A. (2011). Investigating into the use of TQM in Nigerian Construction Industry: *A case study of Large and Medium size firm: Proceedings of the WABER 2011 Conference Vol. 2*