

Social-Cultural Variables Affecting Cost of Construction Projects in the Niger Delta Region of Nigeria

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Abstract: *The intent of this study is to determine the impact of social-cultural influences on cost of construction projects in the Niger Delta region of Nigeria; the severity of social-cultural diversity in project construction cost, then examining the possibility of people from different social cultural backgrounds, working as a team in actualizing the set objectives of the organization, thereby becoming an instrument for either cost reduction or increase of construction projects in the Niger Delta region of Nigeria. In achieving this objective, structured questionnaire on six identified social-cultural variables were distributed to both contractors and consultants within the nine states that constitute the Niger Delta Region. The Likert 5 point scale was used to prepare the questionnaire that was distributed, the questionnaire were distributed randomly to only contractors and consultants that are working on projects whose contract value is above N500million cutting across the nine states. The target group was purely professionals, with requisite qualification and experience not less than five years. Data collected were analyzed using the mean square, frequency, spearman's correlation ranking R and student statistics. The analysis showed the appreciable influence of social-cultural effect on the cost of construction projects in the Niger Delta Region of Nigeria.*

Keywords: Social, Cultural, variables, Contractor, Consultant, Disputes, Empowerment, Non-indigenes, Low productivity, Customs, Beliefs, Payroll

1. Background

The society and the culture of the people have significant effect on the cost of construction projects in the Niger Delta Region of Nigeria (NDR). In most cases, these effects arise due to faced risk in project execution. This means unforeseen circumstances that were not considered during project conception, design and other environmental variables have been examined in this work.

Culture had been defined severally by diverse authors on academic researches. Notably amongst them is the definition by Hofstede (1984), who considered culture in terms of organization as the collective programming of the mind that distinguishes one group from the other, while Barthorpe et, al.,(2000) defined culture as what we are and what we do as a society. The work of Abeysekera (2002), revealed that cultural and social aspects in the construction industry is all about the characteristics of the industry, approaches to construction, competence of craft men and people who work in the industry and the goals, values and strategies of the organizations they work in "This may also include the society in which a construction project is sited for execution". It involves the norms and customs of the community and attracted social life style of the people. Thus, Barthorpe et, al. (2000), Loosemore (1990), had the view that social cultural variables in construction projects is shared, learned, symbolic, tradition, shapes, behaviour and can change overtime. This study is limited to the identification of social-cultural variables that affect the cost of construction projects above N500million in the Niger Delta Region, which is focused on projects embarked on by the Niger Delta Development commission (NDDC).

2. Literature Review

The Niger Delta Region is criss crossed with rivers, rivulets and creeks entering into the ocean. This singular fact make construction of projects quite difficult coupled with social-cultural affinity. Construction projects are complex endeavors which involve human and non-human variables. Some of these variables are purely social-cultural that indirectly increase the cost of construction to both the contractors and consultants. Accordingly, even if a project is well thought of and designed, the execution stage is faced with a lot of encumbrances. This fact was observed in the study of O'brien (1998), Sambasivan and Soon (2006), Arien and Pheng (2006). However, Mohammed (2001), pointed out that variables that affect cost of construction projects are fundamental and global and may cause delay and increase in the cost of projects. Bently (1980) stated that in Nigeria, social and cultural development has rapidly increased wealth, generated by the oil industry. This, however, has created impact on the social life, hence the migration to the cities. The assertion may be correct but development through construction of projects brings influx of non-indigenes who may be skilled or unskilled labourers, which has a dilution of the cultural heritage, Mohammed (2001). It improves acculturation and social life style of the people which can result to conflicts leading to low productivity and incurring more expenses to the contractor. Thus, there occurs project time overrun and cost overrun in the construction project that was not envisaged by the contractor albitio. Creation of job opportunity in form of empowerment increase the site overhead of the contractor as against the head office overhead.

Fisk (1997) as cited in the work of Eshofonie (2008), identified that high cost of construction projects can be minimized if disputes on sites are reduced. Also identified by Ubaid (1991), due to social activities, the project site may be vulnerable to theft actions that increase the cost of construction through proliferation of materials. Also observed was that there occurs tremendous change in social life style due to increase in commercial activities resulting from the influx of artisans. Okpala (1988) however, observed that basic construction materials such as cement had a serious decline in supply resulting to increase in the cost of cement, which is a basic ingredient in construction works and brews high competition by dealers on that material. The effect of this scenario added to the cost of construction projects indirectly in the Niger Delta Region of Nigeria.

The global business environment is dynamic with various variables impinging on the success of business. The cultural and social issues and understanding the culture have been considered essential and necessary for business success, Walker et, al. (2003). Social and cultural differences have served as a pivot for consideration by companies operating in international business or having employees from different cultures and social lives. Therefore, are considered very paramount in the daily business to operate successfully locally or globally.

AnKrah & Proverbs (2004), stated that the concept of culture and social influence on business is becoming more critical in construction projects because of the nature of contracting, global procurement, joint venture partnership in the construction industry. This view also pointed out by Shore and Cross (2005), because of the significance of differences in culture and social lives. Fatehi (1996), observed that managing cultural and social differences enhance organizational effectiveness and give strong competitive advantage to the business organization. However, if the cultural and social differences are not properly managed, it may lead to delay of construction that is, time overrun, cost overrun and decrease in productivity with a reduced quality. Accordingly, there must be an articulated approach in understanding and managing cultural differences in the construction industry, because it is increasingly important to address several issues in the Niger Delta Region of Nigeria, the country as a whole and globally.

The following four dimensions on culture were identified by Hofstede (1994), Power distance, uncertainty avoidance, individualism/ collectivism and masculinity/ femininity. These four dimensions were considered to provide a framework for considering the effects of cultural and social on cost of management and organization of construction projects. Trompenaars (1993), earlier identified seven dimensions of culture as universalism, particularism, collectivism, individualism, neutral-emotional, diffuse-specific, achievement, aspiration, attitudes to time and attitudes to environment.

Studies by Hall (1999), Mahalinganet, al. (2005), Liu and Fellows (1999), Pheng and Alfelor (2000), Chan & Suen (2005), Loosemore & Al Musimani (1999) dovetailed to the significant of social-cultural effect on cost of

construction projects, internationally and nationally and particularly the Niger Delta region is of utmost importance. The studies covered ethnocentric response to cultural differences encountered when working in overseas; most significant impacts on global projects; impact of culture on construction project goals; impact of cultural differences on management, as assurance dispute resolution and effective communication respectively. These studies showed that cultural and social differences have an impact on daily business in the construction industry either directly or indirectly, when one considers the volatility of the region where construction projects are being embarked upon with a lot of oil prospecting and exploration activities going on. In the light of this, the effect of cultural and social differences cannot be underestimated. Thus, Serkanet, al. (2008) described social cultural diversity management as an organizational reaction to the need for competitiveness and to the increasing variety of the workforce cited from Fleury (1999).

However, Adler (1991), observed that the construction companies or business can adopt the following approaches in social-cultural differences that reduce the cost of construction projects.

- The Parochial approach, this means that the workers believe that "our way is the only way" thereby cultural differences are ignored.
- The ethnocentric approach, this implies that "our way is the best way" there is recognition of differences in social- cultural affinity in the organization.
- The synergistic approach means "our way and their way differ, but neither is inherently superior to the other."

According to Hall and Jaggar (1997), this approach recognizes social cultural differences to create competitive advantages for the company or organization, though this approach is least used. The approach is aimed at all employees and the community, who work to achieve a common objective that will be profitable to all stakeholders.

3. Methodology

Literature review of related studies; application and distribution of structured questionnaire to contractors and consultants on their views of social-cultural effect on cost of construction projects. The questionnaire were distributed randomly without a specified population but spread within the nine states in which the Niger Delta Development Commission is operating. Data were analyzed using mean score, frequency, student test and spearman correlation coefficient. The research question was: Of what effect are the social-cultural variables on the cost of construction for effective project delivery? The hypothesis (Ho) of the study is that the social-cultural variables have no effect on cost of construction projects in the Niger Delta Region of Nigeria. And the alternative Ha; is that social-cultural variables have significant influence on the cost of construction projects.

A survey was therefore carried out to examine the effect of social-cultural variables on the cost of construction

projects in the NDR. Six variables were identified and structured questions were distributed to both contractors and consultants that are engaged in executing mega projects in the Region. The variables considered were increase in the payroll of the contractor; Empowerment of rural dwellers; Influx of non-indigenes, Beliefs and Customs of the people and Low productivity.

The questionnaires were prepared using the likert five point scale and were in two parts: Part 1; includes general information on the respondent, Profession, cognate experience in the construction industry. And Part 2; was planned in a way that the respondents rate the questions asked following the Likert five point scale. The received questionnaire were subjected to statistical analysis using the mean score, frequency of occurrence, Spearman's rank correlation (r) and the student statistics for the effect of social-cultural variables on cost of construction projects.

The following are the relevant equations used in analyzing the data;

$$Ms = \frac{\sum fx}{\sum f} \tag{1}$$

Ms - Mean score.
 $\sum fx$ - sum of responses
 Spearman Rank correlation r or product moment coefficient;

$$r = 1 - \frac{6\sum_i d_i^2}{n(n^2 - 1)} \tag{2}$$

Student test;

$$t = \frac{r\sqrt{n-1}}{\sqrt{1-r}} \tag{3}$$

4. Results and Discussion

Table 1: Analysis of Questionnaire Distributed

Description	Number of issued	Number returned	% returned
Contractors	50	35	35
Consultant	50	45	45
Total	100	80	80

Table 1 above is the analysis of the distributed questionnaire and the total that responded. A total of 100 questionnaire were distributed to contractors and consultants executing or designing Mega projects in the Niger Delta Region. 50 questionnaire were distributed to both contractors and consultants and the responses showed that contractors and consultants responded 35% and 45% respectively.

Table 2: Approximated Mean Score of responses and Ranking of the Social-Cultural Variables

Social-Cultural Variables	Mean Score	Ranking
Dispute due social-cultural diversity	3	6
Increase in Payroll of Contractor	3	5
Customs and Beliefs	3	4
Empowerment of Rural Dwellers	2	3
Influx of Non-indigenes	2	2
Low Productivity	2	1

Table above shows the mean score and ranking of the six social-cultural variables. The respondents rated Dispute, increase in payroll and Customs and Beliefs to have severity in their influence on cost of construction. Hence, they had a mean score value of 3. While, Empowerment, Influx of Non-indigenes and Low productivity were rated to have a mean score of 2.

Table 3: Dispute due to Social-Cultural Diversity

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	8	2	40	12	1	60	1	1
4	12	1	48	12	2	48	-1	1
3	2	3	6	6	3	18	0	0
2	1	4	2	6	4	12	0	0
1	9	5	9	9	5	9	0	0
\sum	35		105	45		147		
Ms	3.0			3.27				
MMs	3.08							

Table 3 shows the analysis of data for dispute on site arising from social-cultural diversity. This could be a major cause for project time and cost overrun. Disputes amongst communities which a project is sited may be due to land acquisition, compensation along the right of way (ROW). Human life can be involved in disputes since the Niger Delta Region (NDR) is volatile and may result to force majeure.

Disputes in a construction project site may occur through any of the following; client related, contractor related, consultant related and other encumbrances. Disputes can occur through mere argument therefore, effective communication and understanding of the problem which may be a faced risk that was not envisaged during the conception and design of the project.

Table 4: Increase in the Payroll of the Contractor/ Consultant

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	5	2	25	10	1	50	-1	1
4	12	1	48	6	5	24	-4	16
3	4	3	12	10	2	30	1	1
2	4	4	8	9	4	18	0	0
1	10	5	10	10	3	10	2	4
\sum	35		103	45		132		
Ms	2.94			2.93				
MMs	2.94							

Table 4 above shows Payroll of a contractor/ consultant. This may increase the cost of construction projects in the NDR of Nigeria due to any or all of the following: Employment of artisans (skilled and unskilled) labour; Maintenance of site overhead costs; Spending on

frivolous demands of youths, community executives, women group and council of chiefs and their head which continues as long as the project subsists. The above may have informed the contractors and consultants to rate this variable to be between quite and very significant with a mean score of 2.94.

Table 5: Customs and Belief

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	10	1	50	12	1	60	0	0
4	5	4	20	6	5	24	-1	1
3	6	3	18	8	4	18	-1	1
2	9	2	18	10	2	20	0	0
1	5	5	5	9	3	9	2	4
Σ	35		111	45		131		
Ms	3.17			2.9				
MMs	3.04							

Table 5 shows the statistics of Customs and Beliefs. Every community has beliefs and customs which constitute their culture. It is therefore important that the contractor and his team should endeavour to acquaint themselves with the customs and beliefs of the people where the project is located because both parties are from different social-cultural background.

To achieve a synergy, there must be a concerted effort to provide adequate communication and understanding amongst both parties. However, if the contrary occurs, it leads to colossal loss to the contractor. Some of these communities in the rural areas of NDR believe in several deities, sacred places to mention but a few, thus, violation or destruction on the grounds of ignorance attracts serious penalty financially, and equally may lead to vandalization of equipment and site offices. As a result of unidentified or unforeseen risk elements associated with construction projects in NDR, this variable was rated 3.04 by contractors and consultants that is quite significant to increasing cost of construction projects.

Table 6: Empowerment of Rural Dwellers

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	2	5	10	1	5	5	0	0
4	3	4	12	3	4	12	0	0
3	5	2	15	6	3	18	-1	1
2	5	3	10	10	2	20	1	1
1	20	1	20	25	1	25	0	0
Σ	35		67	45		80		
Ms	1.91			1.77				
MMs	1.84							

The table 6 above shows the data on Empowerment of rural dwellers. This variable though has its effects on the cost of construction projects in NDR, the severity is not considered quite significant. Hence, the assessment has a mean score value of 1.84. In most construction sites, the mode of empowerment is by giving menial jobs to the unemployed men and youths so that they ekeout as

long as the project lasted; this is quite prevalent in the rural settlements of the Region.

Table 7: Influx of Non-indigenes

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	1	5	5	1	5	5	0	0
4	2	4	8	4	3	16	1	1
3	4	3	12	3	4	9	-1	1
2	5	2	15	6	2	12	0	0
1	20	1	20	31	1	31	0	0
Σ	35		60	45		73		
Ms	1.71			1.62				
MMs	1.64							

The above table shows data for influx of non-indigenes. Normally when a new project is sited in a community, there are high hopes that a lot of jobs will be made available, ranging from security, drivers, cleaners to mention but a few. This assertion usually attracts migration of non-indigenes with a view of being engaged in one work or the other to make a daily living. This influx however, explodes the social activities of the community in which the project is sited and adversely dilutes their culture. The integration of social-cultural diversity may likely to brew misunderstanding between indigenes and non-indigenes. The attendant effect is stoppage of work on site thereby leading to time and cost overrun. The respondents consider this variable as less significant hence it has a mean score of 1.64.

Table 8: Low Productivity

Likert Scale (x)	Contractor			Consultant			d	d ²
	f	Ranking	fx	f	Ranking	fx		
5	0	5	0	0	5	0	0	0
4	2	4	8	5	2	20	2	4
3	3	3	9	5	3	15	0	0
2	10	2	20	5	4	10	-2	4
1	20	1	20	30	1	30	0	0
Σ	35		57	45		75		
Ms	1.62			1.69				
MMs	1.66							

Table 8 above shows the response of the contractor/consultant on low productivity. This variable is quite prevalent in most construction projects sites in the NDR of Nigeria. Low productivity may be caused by human or environmental issues which could be attributed to skill of operative and non-familiarities of equipment used, lack of motivation by the employer, waiting idle, travelling, working slowly, doing ineffective work, rework and site related issues.

From table 2 above, the distribution of the influence of various variables are presented in a pie chart in figure 1. It shows the approximate mean scores of the variables that constitute the social-cultural factor affecting cost of construction projects in the Niger Delta Region of Nigeria. It is glaring that the mean score of each variable considered compared with the five point Likert scale are all significant. Dispute due to cultural diversity, increase in

payroll of the contractor, customs and beliefs were rated as quite high with an approximated mean values of 3.0. The rest variables of empowerment of rural dwellers, influx of non-indigenes and low productivity were rated as significant with approximated value of 2.0 respectively. It is therefore inferred that these variables are significant, but their influence on the cost of construction projects are minimal. However, the combined effect of the social-cultural variables on cost of construction projects had a mean value of 2.5 which is above significance influence, but quite significant as juxtaposed on the Likert scale that was used in preparing the questionnaire.

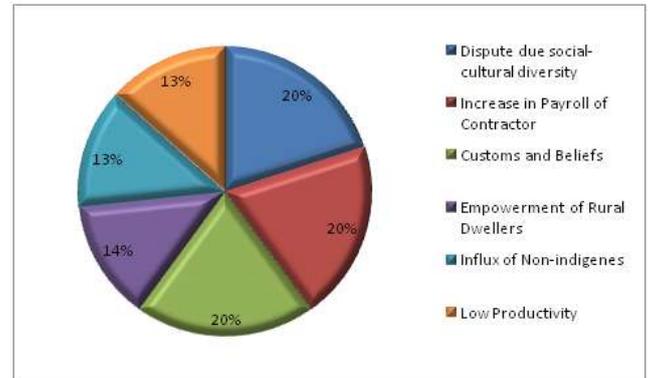


Figure 1: Pie Chart of the social cultural variables

Table 9: Statistical Analysis

R	R Square	Standard Error	f	Unstandardized Coefficient		Standardized Coefficient	t	Significant
				B	Standard Error			
.878	.771	1.000	13.500	3.000	.816	.878	3.674	.021
				-4.000	2.082		-1.922	

Source; Statistical Application of SPSS 22

Table 9 above shows the statistical analysis of the data provided using the SPSS 22 tool to determine the Pearson correlation coefficient R, the determination of the degree of correlation of the dependent and independent variables. R² Also showed the student statistics (t), f-value from analysis of variance (ANOVA) and β-values with their standard errors. Importantly, the Pearson coefficient R= 0.878 and the determination R²= 0.771 with t-value of 3.674 and f-value 13.50, which are greater than table values at 0.05 tolerance limit. This implies that the null hypothesis which stated that the social-cultural variables have no effect on the cost of construction projects in the NDR be rejected. Thus, the alternative Ha which stated that social-cultural variables have significant influence on the cost of construction be accepted.

This statistical analysis yielded the following mathematical model relating effect of the social-cultural factor on the cost of construction projects as follows: C = α + βSc, where C is cost of construction projects, α is a constant on the ordinate, β is the slope of the relationship and Sc is the independent variable of the model.

5. Conclusion

Social-cultural variables have significance on the cost of construction projects in the Niger Delta Region (NDR) of Nigeria.

- The severity of effect due to social-cultural diversity was recorded on dispute with a mean score of 3.04. This value tends to be very significant when compared with the Likert five pointscale.
- The contributions of variables are observed to be significant.
- Mean score and frequency distribution aptly described the relation of the dependent and independent variables. Thus, the model C = α + βS is applicable for prediction of the contribution of each variable.

- Further statistical analysis showed that the calculated student test (t) is higher than the table value of 2.306 at 95% confidence interval. Thus, the Ho is rejected and Hais accepted: which means the social cultural factor is quite fitted, hence should be accepted.
- The spearman correlation rank coefficient R ≈ 0.88 tends to positive one (+1) with an f value of 13.50 greater than table value.
- The combination of data produced R ≈ 0.88 which is the product moment coefficient or spearman rank coefficient and the R² = 0.77, which actually determines the relationship.
- The student statistics (t) for intercept and slope are 3.67 and 3.66 respectively. All are greater than the table value of 2.306 at 95% confidence interval, hence the Ho be rejected and the alternative hypothesis (Ha) be accepted.

The model equation is therefore fit to predict the influence of social-cultural variables on the cost of construction projects in the Niger Delta Region of Nigeria.

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