

Cost Control Variables in Building Construction (A case study of Ibadan North Local Government, Oyo State, Nigeria)

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Abstract: Cost control methodologies in structural engineering are of vital importance due to the alarming escalation of construction cost which needs to be effectively controlled. The Report introduces the concept, needs and aims of cost control. It also visualizes the terms used and those involved in cost control work. The body of the research work centre on the reasons for increasing cost and the various steps taken to control this increase. Questionnaires were designed and administered to professionals within the construction industry which were analyzed and several deductions were derived from this analysis. Conclusion finding reveals that preparation of the cost control of project is highly important as it would help professionals in the construction field to maximize fund and use it effectively during project execution.

The recommendations were that, the government should enact stable policies to strengthen the value of her local currency, the construction industries and the government should embrace the use of alternatively locally sourced materials that is less cheap than conventional building construction materials, avenues for soft loans at minimal interest rates should be made available for sub-contractors by governments, Finally, the government should establish a regulatory body to carefully monitor the values of land cost at various locations in order to checkmate the excesses of the land owners that indiscriminately increase the sales of lands inappropriately that affects the total construction costs.

Keywords: Cost Control Methodologies, Construction Cost, Construction Industry, Project Execution and Professionals.

I. Introduction

Cost Control as defined by Neil J.M. (1982) is the processing of raw information received from projects, operating divisions, and special staff division and relating this information to various project cost estimates and schedules for the purpose of presentation of results in the form of reports to all levels of company managerial, the client and outside agencies. According to Nunnally (1998), cost control of a project involves the measuring and collecting the cost record of a project and work progress. It also involves the comparison of actual progress with the planning. The main object of cost control of a project is to gain the maximum profit within the designated period and satisfactory quality of work.

Unfortunately, the accuracy record for estimating construction costs is poor; all too often key factors which affect cost are over looked and undervalued. In illustrating this point, one will look at a case study of the Olympic complex in Montreal, Canada, built to accommodate the 1976 Summer Olympics. This project drove many clients and contractors into tears and bankruptcy because of the cost overruns that developed between the budget phase and completion. Many problems were encountered during this project.

The principal causes of high costs of construction are due to delays and cost overruns of projected costs (Okpala and Aniekwu, 1988). According to Ioannou and Carr (1988), the cost of industrial buildings construction has risen dramatically in recent years. Construction experience should be available to the owner during all the design phases of a project to achieve maximum cost effectiveness savings (Boyd C. Paulson, 1976), Bell, L. and Stukhart, G. (1987), backed up this idea by adding that the responsibilities of construction management in design can be considered as one of the results of the need to achieve more efficient, realistic designs which take advantage of the skills of construction professionals.

The significance of the participation of construction expertise during the early phases of a project cannot be over-emphasized (Neil N. Eldin, 1988). For most people, their environment is the built environment. It is built by architects and engineers who are therefore responsible for its aesthetic qualities and maintenance (Ojedokun *et al*, 2012). A good cost-accounting system is the heart of construction firms and its importance cannot be over emphasized (Volpe, 1971).

II. Variable Cost Parameters

The variable cost parameters used were;

- i. Labour cost
- ii. Material cost
- iii. Plant charges
- iv. Sub-contractors
- v. Land cost

The dependent variable is the cost control methodology. The information gathered during the field work was quantitatively analysed. The frequency distribution of the respondents was taken and then cross tabulation.

In this research, respondents of research are limited to Construction companies in Ibadan North local government, Oyo State, Nigeria. The set of people are classified as shown in **Table 1** below frequency distribution of respondents. There were 30 respondents that the questionnaire was administered to and they all gave their responses as follows.

Table 1: Frequency Distribution of Respondents

| Field of Specialization | Frequency | Percentage |
|-------------------------|-----------|------------|
| Consultant | 11 | 36.7 |
| Developer | 4 | 13.3 |
| Contractor | 9 | 30 |
| Project Manager | 6 | 20 |
| Total | 30 | 100 |

Table 1 shows the field of specialization of the respondents. It also shows that 36.7% of the respondents were consultants, 13.3% of the respondents were developers, and 30% of the respondents were contractors while 20% of them were project managers. The result shows that there are more consultants respondents.

Table 2: Cost Control Methodology

| Question | Frequency | (%) |
|---|-----------|------|
| Do you understand the cost control system during the construction? | | |
| Totally | 30 | 100 |
| Partially | - | - |
| Averagely | - | - |
| Do not understand | - | - |
| Total | 30 | 100 |
| Do you carry out the cost control system during the construction stages? | | |
| Yes | 30 | 100 |
| No | - | - |
| Not sure | - | - |
| Not at all | - | - |
| Total | 30 | 100 |
| If Yes, Please specify the method? | | |
| Market prices | 13 | 43.3 |
| Elementary basis | 8 | 26.7 |
| Labour cost | 6 | 20 |
| Others | 3 | 10 |
| Total | 30 | 100 |
| How often do you prepare the cost control project? | | |
| Weekly | - | - |
| Monthly | 6 | 20 |
| Quarterly | 11 | 36.7 |
| Yearly | 9 | 30 |
| Others | 4 | 13.3 |
| Total | 30 | 100 |

Table 2 shows the views of respondents on cost control system. It shows that all the respondents understood the cost control system during construction; also, all the respondents carry out the cost control system during the construction stages. The respondents all said yes, that they carry out the cost control system

during the construction stages, 43.3% of the respondents indicated that they made use of the market prices method to carry out cost control system during construction stages, 26.7% of the respondents indicated that they made use of the elementary basis method to carry out cost control system during construction stages, 20% of the respondents indicated that they made use of the labour cost method to carry out cost control system during construction stages while 10% of the respondents indicated that they make use of other methods to carry out cost control system during construction stages. Majority of the respondents made use of the market prices method to carry out cost control system during construction stages.

Concerning how often respondents prepare the cost control project, 36.7% of the respondents said they prepare control cost quarterly, 20% of the respondents indicated monthly, 30% indicated annually while 13.3% indicated that they prepare the cost control at other times which could be based on some other economical factors like increase in fuel prices. This shows that majority of the respondents prepare cost control on quarterly basis. This would also help professionals and people in the construction field to maximize fund and use it effectively during project execution.

Table 3: Distribution of Respondents' Views on High Cost of Construction Variables

| Question | Frequency | (%) |
|--|-----------|-----|
| In your view what is the major reason for high cost of labour encountered in the construction industries? | | |
| Unrealistic demand by labour unions | 3 | 10 |
| Government decision- review on wages, frings benefits | 10 | 33 |
| Inflation | 13 | 44 |
| Scarcity of skilled labour | 4 | 13 |
| Total | 30 | 100 |
| What is the major reason for high cost of construction material in the construction industries? | | |
| Profiteering by various supplier | 2 | 7 |
| Competitive high demand | 3 | 10 |
| Scarcity of materials | 6 | 20 |
| High Cost of Production | 19 | 63 |
| Total | 30 | 100 |
| In your view, what is the major reason for increase of plant charges in the construction industries? | | |
| Devaluation of currency | 4 | 13 |
| Increase in fuel rates, lubricant etc | 12 | 40 |
| Unavailability of spare parts | 6 | 20 |
| High Cost of Maintenance | 8 | 27 |
| Total | 30 | 100 |
| What is the major reason for increasing cost by sub-contractors in the construction industries? | | |
| Overestimation by sub tractors | 1 | 3 |
| High cost of material, labour and plant charges due to importation | 11 | 37 |
| Delay and short period for the completion of project | 2 | 7 |
| High bank interest rates on loans and overhead | 16 | 53 |
| Total | 30 | 100 |
| How does the land cost influence the cost in construction industries? | | |
| Increase in the value of land due to increasing development of the area | 13 | 43 |
| Private ownership | 4 | 13 |
| Little effect on high cost of construction | 7 | 23 |
| Substantial payment for compensation | 6 | 20 |
| Total | 30 | 100 |

Table 3 shows the views on respondents based on high cost of labour, high cost of construction materials, increase of plant charges, increasing cost by sub-contractor and land cost.

Fig. 1 shows 44% of the respondents attributed it to inflation, 33% of the respondents attributed it to government decision-review on wages, and 13% of the respondents attributed it to scarcity of skilled labour and 10% attributed it to unrealistic demand by labour unions. The result shows that majority of the respondents attributed high cost of labour to inflation.

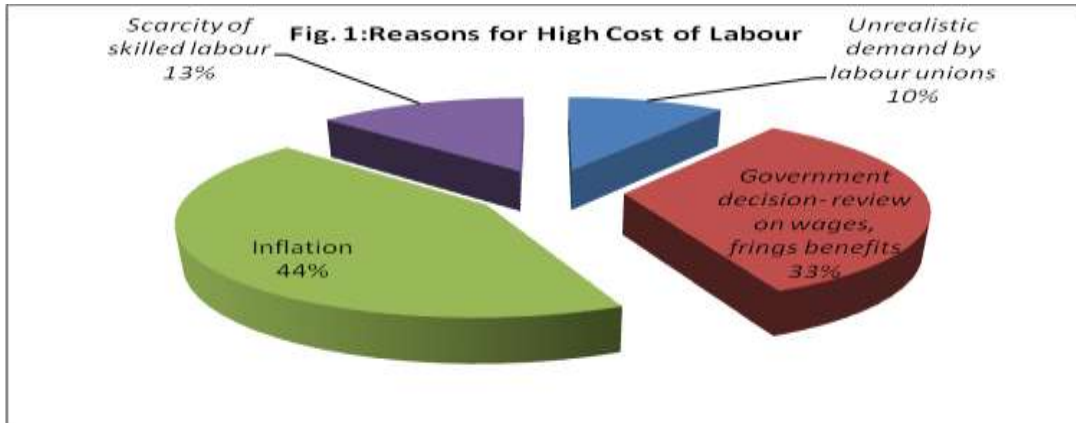


Fig. 2 reveals 63% of the respondents attributed reasons for high cost of construction materials to high cost of production, 20% of the respondents attributed it to scarcity of materials, 10% of the respondents attributed it to competitive high demand while 7% of the respondents attributed it to profiteering by various suppliers. This shows that majority of the respondents attributed high cost of production as the major reason for high cost control of construction materials.

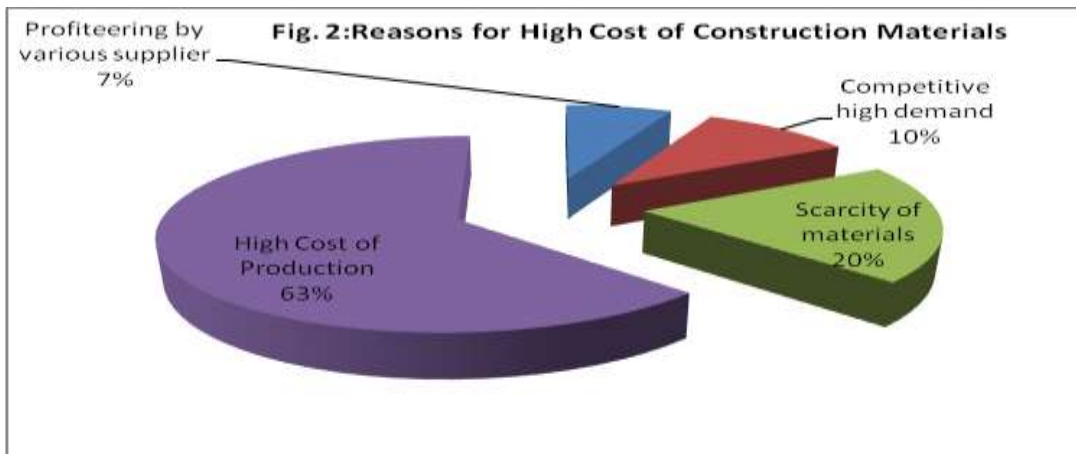


Fig. 3 shows 40% of the respondents attributed increase of plant charges to increase in fuel rates and lubricants, 27% of the respondents attributed it to high cost of maintenance, and 20% attributed it to unavailability of spare parts, while 13% of the respondents attributed it to devaluation of currency. The result shows that majority of the respondents attributed increase in fuel rates and lubricant as the major reason for increase of plant charges in the construction industries.

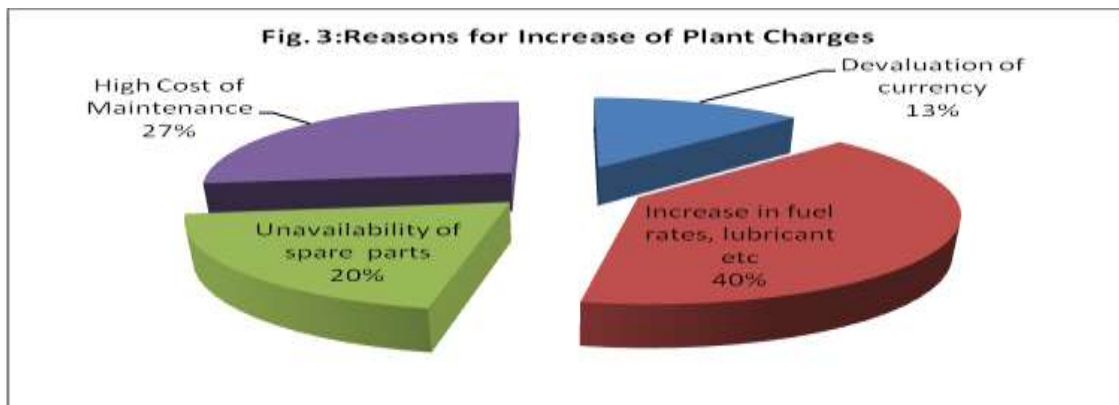


Fig. 4 reveals 37% of the respondents attributed increasing cost by sub-contractors to high cost of materials, labour and plant charges due to importation, 53% of the respondents attributed this to high bank interest rates on loans and overhead, 7% of the respondents attributed it to delay and short period for the

completion of projects, while 3% of the respondents attributed this to overestimation by sub-contractors. The result shows that majority of the respondents attributed high bank interest rates on loans and overhead as the major reason for increasing cost control by sub-contractors, this also means that most projects are funded from loans obtained from the banks.

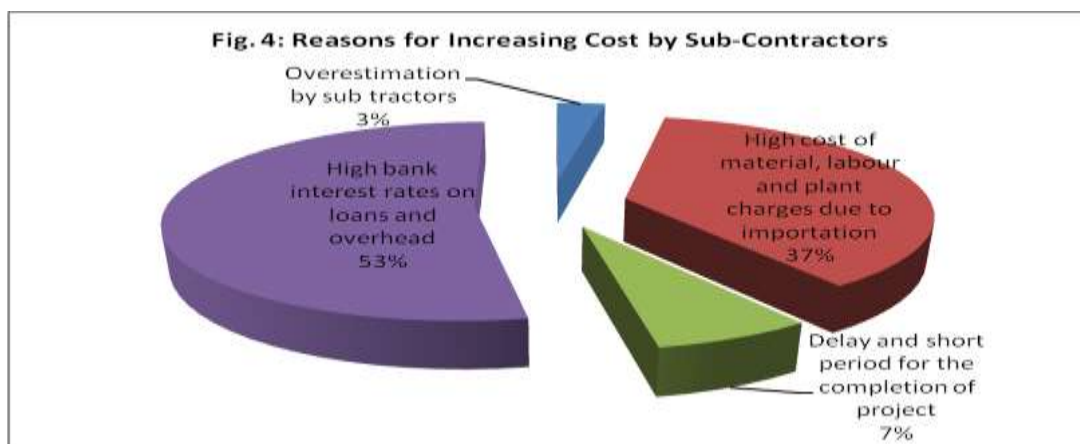
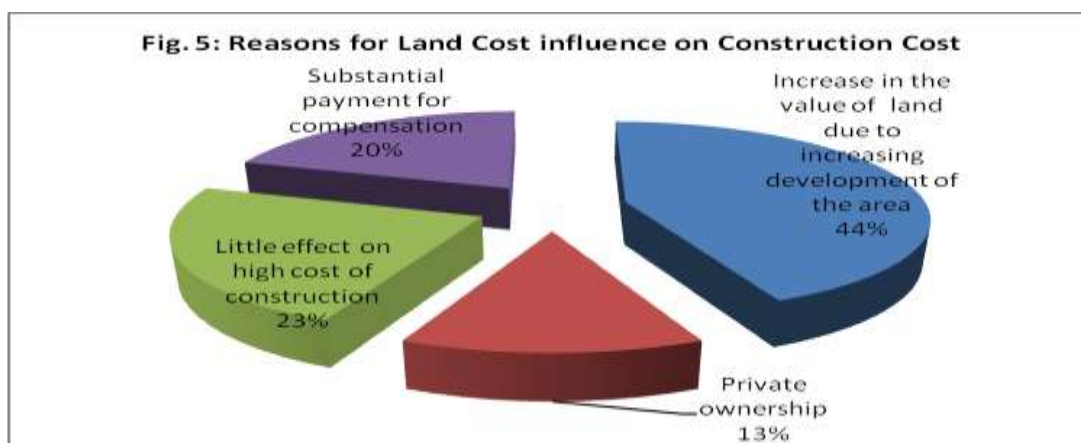


Fig. 5 reveals that 44% of the respondents said increase in the value of land due to increasing development of a an area is what make land cost to have influence on cost, 23% of the respondents said increase in the value of land was due to little effect on high cost of construction, 20% of the respondents said it was due to substantial payment for compensation, while 13% respondents said it was due to private ownership. This shows that majority of the respondents attributed the influence of land cost on cost in construction industries to increasing development of an area is what make land cost to have influence on cost.



III. Conclusion

High Inflation rate which is the major reason for high cost of labour in the construction industries should be curbed by government by making relatively stable policies to strengthen the value of her local currency thereby causing the value of her local currency to appreciate.

The construction industries and the government should embrace the use of alternative locally sourced materials that is less cheap than conventional building construction materials. This will drastically reduce the high cost of construction material presently witnessed in the construction industry.

The recent increase of fuel rates and its bye products has significantly increased the charges of renting plants for the purpose of construction works. Huge amount of funds is spent by the federal government on fuel subsidies without showing any significant reduction in fuel prices. Building of more refineries to meet up with the demand of her citizenry and maintenance of the existing ones to perform at its optimum capacity will influence the reduction in plant charges and also overall construction cost.

Avenues for soft loans at minimal interest rates should be made available for sub-contractors by governments. The present interest rate on loans obtained from banks is killing thereby making quite a number of construction firms to go bankrupt. Specialized banks for these purposes no longer function under rules and guidelines for its establishment rather they seek on how to make maximum profits by inflating the interests' rates.

Finally, the government should establish a regulatory body to carefully monitor the values of land cost at various locations in order to checkmate the excesses of the land owners that indiscriminately increase the sales of lands inappropriately that affects the total construction costs.

References

- [1] J.M Neil, "Construction cost estimating for project control," 1st ed., Prentice Hall, New Jersey, 1982.
- [2] S.W. Nunnally, "Construction methods and management," 4th ed., Prentice Hall, New Jersey, 1998.
- [3] D. Okpala and A. Aniekwu, "Causes of high costs of construction in Nigeria," *Journal of Construction Engineering and Management.*, vol. 114, No. 2, pp. 233–244, 1988.
- [4] P.G. Ioannou and R.I. Carrt, "Advanced building technology matrix system," *Journal of Construction Engineering and Management.*, American Society of Civil Engineers, vol. 114, No. 4, pp. 517–531, 1988.
- [5] Boyd C. Paulson, "Designing to reduce construction costs," *Journal of the Construction Division, ASCE.*, vol. 102, No. 4, pp. 587–592, 1976.
- [6] L. Bell and G. Stukhart, "Cost and benefits of materials management systems," *Journal of Construction Engineering and Management.*, vol. 113, No. 2, pp. 222–234, 1987.
- [7] Neil N. Eldin, "Constructability improvement of designs," *Journal of Construction Engineering and Management.*, vol. 114, No. 4, pp. 631–640, 1988.
- [8] O.Y. Ojedokun, T.O. Odewumi and J.K. Fasola, "Maintenance model of hostel buildings for effective performance and aesthetics," *International Journal of Modern Engineering Research (IJMER)*, vol. 2, Issue 5, pp. 3390–3397, Sept-Oct 2012.
- [9] S.P. Volpe, "Construction management practise," John Wiley & Sons Inc., New York, 1971.