

EVALUATION OF EFFECTIVE COMMUNICATION AS A TOOL FOR COST CONTROL IN NIGERIA CONSTRUCTION INDUSTRY

Mbakwe C. C.; Nze, C.O.N and Nnadi E.O.E

^{1,2,3} Quantity Surveying Department, Enugu State University Of Science And Technology, Agbani

ABSTRACT

Construction participants spend larger parts of their time either in an interpersonal, intergroup, intra-group organizational on external level. It is thus no surprise to find that at the root of a large number of construction problems is poor communication. Moreover, effective communication has been described as an essential component of organizational success. Review of Recent literature in the area of communication within construction industry revealed that little has been done in the context of Nigerian construction industry. This paper therefore presents the result of research that evaluates effective communication as a tool for cost control in Nigeria construction industry. Primary source of data for this study was through well-structured questionnaire, which were administered to professionals in the construction industry. The analysis of data collected was carried out using both descriptive and inferential statistics. The study revealed that currently "telephone" is the greatest means of communication used in Nigerian construction industry (with mean value of 4.10) and standard deviation of 1.028. Distorted perception, poor pictorial representation and defensiveness are among the greatest barriers of effective communication in building construction industry. The effect of ineffective communication is the poor performance of construction project in terms of the "Iron triangle" (i.e. time, cost and quality). If cost is not properly controlled, time will also be affected and quality of project reduced. It is therefore, recommended that basic principles of communication should always be observed on construction sites during execution and amongst professionals. Moreover, participants in the industry should avail themselves the opportunity of further personal development in form of periodic training to educate themselves on the best ways to communicate in an effective manner in order to enhance cost control in project execution in Nigeria construction industry.

Keywords; cost control, construction industry, construction professional, effective communication project delivery.

INTRODUCTION

Effective communication is an essential component of organizational success as people in organization typically spend over 75% of their time in an interpersonal situation interpersonal, intergroup, intra-group, organizational, or external levels, thus it is no surprise to find that at the root of a large number of organizational problems is poor communications,

(Awodele and Osadela, 2013). Communication is a means by which operatives and other members of the building team are linked (considering construction) in order to achieve the central goal. In all aspects of human professions, communication is seen as a vital central organ especially through the use of language.

In construction, communication could be achieved through letters, drawings, symbols, sign, posters, bill of quantities, specifications, schedules of rates, scheduled, conditions of contract, articles of agreement and word through which members of an organization sends and receives information to the public in large (OIu, 2007). Through effective communication, the workers especially in construction firms find it easy and highly productive to work together. Instructions and orders are given and they are carried out as expected once they are well understand and acted upon rightly. The working day of every personnel is filled with communication in different ways and forms through orders, directives, information, conversation, request and rumours. It was observed that unless an individual or a group of individual can make known to others instructions, orders, and wants, opinion, feelings and so on. Then these ideas, instructions, feeling will remain locked in the mind of the intending. Communicator and so no action can be taken upon them (Awodele and Osadela, 2013). This exchange of idea and subsequent actions and reaction can be done either effectively or ineffective manner. When ideas, instructions are given using the right medium at an appropriate time and the receiver can understand and act on it, such communication can be said to be effective. In solving the problem of poor project delivery in Nigeria, Oko (1989) proposes effective communication as a sine qua - non for effective housing delivery in the country.

The major problem facing the construction industry is that of ineffective communication as explained by (Oyekunle, 1996). Many a time communication ineffectiveness has caused

delays in the delivery of projects. Whenever a project is delayed, as a result of lack of effective communication there will be a sort of prolonged stay on site beyond the scheduled date for completion. According to (Aibinu and Jagbors, 2002) these are without some cost consequences. In other hands, communication is sad to be ineffective when the information sent by the sender cannot be interpreted by the receiver; thus it has huge financial implication. The aim of the research is to evaluate how effective communication aid in project cost control in Nigeria construction industry.

REVIEW OF RELATED LITERATURE

Communication in the Construction Industry

Communication can be analyzed as a two way process as information is not only sent but also received, understood and implemented (Adeleke 2004). Communication is said to be effective within the working group in the industry only when the transmitted ideas achieve their desired action or reaction, as the operation involved in the construction industry is a team effort, embracing the client, quantity surveyor, architect, consulting engineer, specialist and the contracting organization with the main objective of getting things down through human beings, (Adeleke, 2004).

The operational procedures and other management activities associated with the design, construction and subsequent performance of a building rely a great deal on how information is being transmitted between the various participants on the building team and for this reason, method of communication should not only clearly issues but must also attempt to bring harmony to the entire work process and also foster co-operation between the parties to ensure maximum contribution from members. In construction industry communication can be classified as follows:

- a. Communication between client and the consultants
- b. Communication between the consultants.
- c. Communication between the consultants and the contractor
- d. Communication on site.

According to Olairan (2015), communication is very essential in project execution. It plays a vital role in all stages of construction processes such as design, production, organization and management. Various professionals in the construction industry must communicate effectively for any given project to be successful. During the course of project execution, information in the form of drawings, specifications, bill of quantities and construction methods must be fully disseminated (Mehra, 2009). Some professionals may not be able to understand some aspects of a project if little information are available thus leading to poor cost control and cost-overrun of projects, There is need for professionals within the industry to appropriately communicate with each other for the successful delivery of performance goals within the organization. Scope of work and details of construction are communicated by means of drawings, bill of quantities, contract documents, graphs, pictures, addendum and specifications and so on.

The Concept of Cost-Control

Achieving effective project delivery dictates that cost has to be controlled during the entire phases of projects; that is the initial, pre-tender and post-tender, construction stage and up to the maintenance period. Meanwhile, capital cost estimate to the client of proposed works is not simply production cost, but production cost plus or minus (\pm) mark up, (Barango, 2017). Production cost could be said to be an amalgam of direct cost, indirect cost and overheads. Therefore the information utilized by the client's cost advisers should impart knowledge of these costs. Meanwhile, the relative importance of each type of cost will vary between projects; it can be assumed that the direct cost is the primary cost feature of any project.

Indirect costs are those which relate to the overall duration of the project. They are affected by the rate of completion of individual activities in as much as these cause variation in projection duration. Overhead costs include management and head office overhead (Seeley, 2014). Estimating the total cost of the work is derived from the cost of labour, materials, plant, preliminaries, provisional and prime cost sums, day work and overheads (MacBarango, 2017). The estimation of the total cost of the work consists of estimating the cost of the individual elements of the cost and building up the total cost taking into account each individual element of the cost concerned. The major elements of the total cost of the work are; the labour cost, material cost the plant cost. The remaining elements which contribute to the total cost of the work are; day works, provisional sums, prime cost sum and contingencies, preliminaries or site charges. Cartilage (2007) assert cost as an include site preparation and infrastructure costs, demolition, contaminated land costs, roads sewers and main sewers, Construction Costs, disposal costs and developer's profit.

Cost to the building contractor represents all those items included under the heading of his expenditure. Cost relates to the manufacture and price relates to selling (Seely, 2004). The cost of labour, material and equipment used in the work may not account for the entire anticipated cost of the project. Some services and items of construction required to complete the project may not by definition be incorporated into the works. It is necessary to include those costs as mark ups to cover the contractors expenses (Bledsoe 2002).

The construction industry and the environment in which it operates have changed significantly. The process of change now seems to be never ending. Against this background, contractors and consultants have to cope with the ever increasing pressures for faster construction to a higher quality at a lower cost. However what has not changed is the importance of effective cost control (Cartilage, 2007). Cost should not be simply monitored, the need to be controlled and managed from the early design stage through to project

completion. Some CAD Systems give cost information, but they cannot control cost, that requires specialist human knowledge. Client's wants certainty of price, project constructed within budget, completion on time, the best quality possible for the price, value for money, no surprises contractors and consultant want a reasonable return for the risk they take, payment on time, clients who do not keep changing their minds, satisfied client and repeat business (Barnago, 2017)

Jagun (2006) opined that quantity surveyors are the cost managers of construction projects in Nigeria. Hence quantity surveyors are trained in the art and science of cost management for building, industrial, civil engineering, mechanical and electrical aspects of construction. This stage starts from the planning to the issues of certificates. The most critical phase of a project is always the execution phase. Based on existing literature, the most post contract cost controlling techniques used in the Nigerian construction industry are extrapolated via cash flow, taking corrective action, monitoring overheads, monitoring labour cost, monitoring material cost, monitoring equipment, managing variations, monitoring completed units, unit rate, interim valuation, incremental milestone, establishing baseline, identifying indicator of cost overruns, financial statement and summarizing profit, site meeting and post project reviews, historical data, cost forecasting and using established budget, targets, (Jagun, 2006). It was observed that none of the above technique can be achieved without effective communication among the stakeholders in the construction industry.

RESEARCH METHOD

This research covers project participants in construction projects, primarily Quantity Surveyor, Architects, project managers and others who are part of construction projects team. The study collected data from construction professionals with an experience from 5 years and 15 years above. The study was carried out in Anambra State of South Eastern Nigeria. Data

collection was done through a questionnaires self administered on 50 projects participant, 40 were returned. The research results can be generalized to a larger population within acceptable error limit. The question which this research sorts to explore was on “effective communication as a tool for project control in Nigerian construction industry.

A 5-point ranking system were utilized where the respondents were asked to indicate from the list: assessing means of communication on construction site; barriers to effective communication on construction site; assessing the effect of ineffective communication on project delivery and cost control; effect of effective communication on project delivery and cost control and mitigating measures for minimizing effect of ineffective communication on project delivery and cost control

RESULT AND DISCUSSION

Assessing means of communication on construction sites

Table 1 gives the results of mean scores and standard deviation on the means of communication in construction site, with the means value ranging from 3.13 - 4.10. We can observe from the table that, one mean of communication scored mean value was above 4.10 while the remaining sevens means of communication had mean scores between 3.13 - 3.93. Out of all the afore-mentioned means of communication in the table, “Telephone” was considered most as one of the means of communication in construction site and S.D. -1.028 while the demonstration was adjourned least as the means of communication in construction site among others (M=3.13) (and S.D. = 1.332)

Table 1: Means of communication on construction site

Communication tools/means	Mean (M)	S.D.	Rank
Working drawing, BOQ specification etc	3.93	0.944	2
Telephone GSM/Text Messages	4.10	1.028	1
Technical Report	3.26	1.284	6
Notice board	3.20	1.095	7
Demonstration samples	3.13	1.332	8
Site meeting/minutes/site instructions	3.79	1.165	3
Graph/site progress chart/programme of work	3.50	1.479	4
Computer/email internet web site	3.40	0.968	5

Source: Research Field work 2018

$$\text{Mean} = \frac{\sum EX}{N}$$

Where $\sum EX$ is the sum total of the scores and N is the numbers of cases or subjects.

S.D. (Standard Deviation)

$$\text{S.D} = \sqrt{\frac{\sum EX^2 - \frac{(\sum EX)^2}{N}}{n - 1}}$$

Barrier to effective communication on construction sites

Table 2 gives the result of mean score analysis carried on the barriers of communication in construction with the mean value ranging from 3.30–4.53. We can see from the table that two barriers of communication scored mean value, were above 4.00 while the remaining eight means of communication had means scores between 3.30-3.93. Out of all the aforementioned barriers of communication, “poor pictorial representation was considered most as one of the means communicating in construction site barriers (M = 4.53), (S.D 0.730). While the irregular site meeting was adjourned least as the barriers of communication in construction site among others (M = 3.30) (S.D = 1.178)

Table 2: Barrier of Communication on Construction Site

Factors	Mean (M)	S.D.	Rank
Poor Pictorial Representation	4.53	0.730	1
Poor written media	3.70	1.178	6
Inadequate communication equipment	3.53	1.136	7
Semantic Problem	3.90	0.994	4
Technical Information	3.86	1.195	5
Incompatibility	3.43	1.072	8
Irregular site meeting	3.30	1.178	10
Improper Education straining	4.36	0.764	2
Perception about information	3.40	1.354	9
Inappropriate use of language	3.93	1.142	3

Source: Researcher Fieldwork 2018

Assessing the Effects of ineffective communication on project delivery and cost control

To assess the severity of the effect of ineffective communication in Nigeria construction industry, the respondents were asked to indicate the severity of the identified effects of ineffective communication on project delivery and cost control using the likert scale: 5 = Extremely severe, 4 - greatly severe, 3 = moderately severe, 2 = severe, 1 = Not severe. Below are the findings from their responses.

Table 3: Effects of ineffective communication on project delivery and cost control

S/N	Effects of ineffective communication on project delivery and cost control	Score of each factor					Mean Score	S.D	Ranking
		5	4	3	2	1			
1.	Leading to construction dispute	9	11	10	7	3	3.40	0.968	6
2.	Leading to Arbitration	11	10	7	9	3	3.43	1.072	5
3.	Total abandonment	8	10	5	10	7	3.05	1.512	7
4.	Protracted Litigation by parties	10	11	10	6	3	3.48	1.325	4
5.	Cost Overrun	17	10	7	3	3	3.88	1.188	2
6.	Time Overrun	18	9	7	4	2	3.93	1.172	1
7.	Poor quality	16	7	8	5	4	3.65	1.263	3

Source: Researcher Field Work 2018

From table 3, the mean score (Ms) was computed to identify the most severe effects of ineffective communication from the identified list of effects as gathered from informal interview with practitioners and from the review of literature. The decision rule here is that any factor with mean less than 3 is said not to be significant and any of those with a mean score equal or greater than 3 are stood significant. It is evident that all the seven factors were significant having a mean score greater than 3. It was gathered that time overrun, cost overrun, poor quality and protracted litigation by the parties top the list, with a mean score of 3.93, 3.88, 3.65, and 3.48 respectively. The last but not the least was total abandonment of project with a mean score of 3.05.

Mitigation Measures for minimizing effects of ineffective communication on project delivery and cost control

Table 4 presents the findings of the study on the effectiveness of the identified mitigating measures to reduce the effects of ineffective communication on project delivery and cost control. Respondents were asked to rate the significance of some basic principles of communication with a view to see those that are necessary to achieve effective communication. It was found that both the sender and receiver of information in the

construction industry should always check for possible misunderstanding or ambiguity in the message they are sending or received. Moreover, they should avoid being defensive when queries are raised concerning the information, and receivers should ask for clarification in case of any ambiguity. These factors were ranked 1st, 2nd and 3rd by the respondent with mean scores of 3.90, 3.88 and 3.83 respectively.

Table 4: Assessment of mitigating measures for minimizing effects of ineffective communication on project delivery and cost control

Respondent's perception of mitigating; score of each factors

S/N	Minimizing the effect of ineffective communicating on project delivery and cost control	Score of each factor					Mean Score (MS)	S.D	Ranking
		5	4	3	2	1			
1.	Try not to be defensive	20	6	7	3	4	3.88	1.188	2
2.	Check on possible misunderstanding	17	12	4	4	3	3.90	0.994	1
3.	Receiver of sent information should ask for clarification in case of ambiguity	13	15	6	4	2	3.83	1.203	3
4.	Clients should maintain constructive relationship with their employee and other consultants	18	10	2	6	4	3.80	1.213	4
5.	Use open ended and close ended question opportunity	11	16	5	5	3	3.68	1.159	5
6.	Use active listening techniques such as stating your understanding of what you are hearing	13	11	9	3	4	3.65	1.168	7
7.	Use eye contact, encouraging gesture	12	13	8	2	5	3.63	1.174	8
8.	Managers and supervisions should lead by example	8	15	10	3	4	3.59	1.187	10
9.	Focus on the situation, issues, behaviour, not the person	10	14	7	5	4	3.53	1.207	9
10.	Maintain the self-confidence and self esteems	11	15	8	2	4	3.68	1.159	5

Source: Researcher Field Work 2018

Table 5 present the impacts of effective communicating on cost control and project delivery.

Table 5 shows the analysis of the impact of effective communication on cost control. From the results obtained, respondents opined that effective two way communication will make a positive impact and will go a long way in cost control of project during construction. And on-going communication between project proponents and its stakeholder improve cost control.

Table 5: The Impact of effective examination on cost control of projects

S/N	Items	Score of each factor					Mean score	S.D	Ranking
		5 (SA)	4 (A)	3 (D)	2 (SD)	1 (GD)			
1.	Communication plans and strategies must be determined/ established at the outset	10	15	8	2	5	3.57	1.093	4
2.	Two-way examination should be encourage	18	14	7	1	0	4.23	1.089	1
3.	On-going communication between project proponents and its stakeholders improve cost control & project success	18	12	3	2	5	3.90	1.181	2
4.	Appropriate communication media for specific purposes/audiences are necessary	10	10	8	5	7	3.28	1.004	6
5.	Effective communication strategies are needed to minimized protectoral disputes and misunderstanding	8	12	9	3	8	3.30	1.010	5
6.	Meetings help overcome communication barriers and increase performance level	17	10	7	3	3	3.88	1.188	3

Source: Researchers field works; 2018

Discussion of Results

The ranking according to the mean rating of the means and barriers to effective communication in the site as perceived by respondent is summarized in Table 1 and 2, It is evident from the study that telephone is the greatest means of communication in construction industry with mean value of 4.10 while sample demonstration was Adjoined least as the means of communication in construction having value of 3.13. Poor pictorial representation was rated as the greatest barriers of effective communication in construction site with mean

value of 4.53. From this research communication on site is faulty if there is no good pictorial work that might serve as guide on construction site. If drawing lacks the graphic work it might lead to inability to carry out construction work successfully and this will equally affect cost and time negatively. Irregular site meeting in the construction site is not rated high with mean value of 3.30 and as such is not mostly used as the medium of communication in construction site but is rated high as the barriers that cause ineffective communication.

All the identified means of communication and barriers that causes ineffective communication have got means rating of more than 3.0 which imply, that all has significant effect on communication in the construction site.

From the research and direct visits to some construction sites coupled with the information gathered through the questionnaire distributed, it was revealed that most construction site are aware of the importance of effective communication as such that qualified personnel were appointed to man some strategies point effectively because in the time past effective communication has not been give adequate attention which lead to inadequate delivery of project and cost control.

Conclusion

Telephone, the print media, demonstrate samples, sites meeting, working drawing, bill of quantities, specification, site progress chart, technical report etc are the major means of communication in construction site in Nigeria. Telephone is the greatest means of communication even in Nigeria construction industry with mean value of 4.10. This is in line with Olu report (1996) which asserted that flow of messages through channels requires some powerful mean(s), together with the right people and the right mean in which it can take place.

Sample demonstration was adjudged least as the means of communication in Nigeria construction industry among others with mean value of 3.13.

Pictorial representation is the greatest barrier of effective communication in construction industry with mean value 4.53. This is in line with the result of finding by Chen et al (2008) on the construction industry as an information intensive environment from design offices to project construction sites. From the research work carried out it was depicted that poor pictorial representation is the major factor that cause ineffective communication on site. This study has established thus that ineffective communication lead to unsuccessful delivery of projects in terms of cost, time and quality. Effort then need to be mark in ensuring that communication within the industry should be done in an effective manner or ways in order to enhance cost control during project execution.

RECOMMENDATION

Thus, the following recommendations are provided.

1. Basic principles of communication should always be observed on construction site and among professional, the use of telephone should be encouraged among others as one of the means of communication in construction site. Moreover, participant in the industry should avail themselves opportunity for further personal development in form of periodic training so as to educate themselves on the best way to communicate in an effective manner.
2. Poor pictorial representation is the greatest barrier of effective communication in construction industry follow by improper Education and training of personnel about good communication skill. It is therefore recommended that, expert should be employed and staff in the construction site or professionals should be sent on periodic

training and also ensure proper education awareness on barriers to effective communication.

3. Complete working drawing with full bill of quantities should be prepared including specification as these will enhance cost control at early stage and even continue throughout the period of construction.

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