

Appraising the Present State and Challenges of Construction Site Communication in Nigeria

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ABSTRACT

The ever changing needs of construction clients and the pace at which technological advancements have reshaped the world today is re-structuring the way and manner in which on-site communication is carried out. Consequently, the study aimed to assess on-site communication and its challenges in the Nigerian construction industry, with a view to ascertaining the best means of improving communication on construction sites. This was achieved via questionnaires and interviews. A total of 84 copies of questionnaire were administered and 59 were completed, returned and found useful, thus, giving a response rate of 70%. Data garnered were analysed and presented using mean score index, relative importance index, percentages and charts. On-site communication in the Nigerian construction industry is gradually becoming more digitalised, because of the emergence of social media. The use of ICT tools for on-site communication stands at 64% and social media 83%. However, issues such as information overload, procedures/means of communication, difference in background, noise and distractions which are peculiar with construction works hinder on-site communication in the study area. The study recommends that adequate communication software, customized to attend to site communication challenges should be introduced and adopted.

1.0 INTRODUCTION

The construction industry is one of the most booming industries in the world. The industry accounts for about one-third of the world's gross domestic product, seven percent of employment, half of all resource usage and up to forty percent of energy consumption. The construction industry is also a key indicator and driver of economic activity and wealth creation (Wilma and Marc, 2003). Construction site products such as buildings, roads, bridges are actualised via effective communication among the construction team. Effective and efficient communication depends upon the quality of relationship among clients, professionals (consultants), contractors and sub-contractors.

A number of authors have defined communication in different ways, which are mainly reflections of their points of view and orientation of the concept itself. One of these authors is Cherry (1966), who defines communication as the establishment of social units from individuals by the use of languages or signs, and the sharing of common sets of rules for various goal-

seeking activities. Stanley (2007) also defines communication as a clear, open and timely sharing of information with appropriate individuals or groups. Communication involves transmitting and receiving ideas, information and languages. Communication is one aspect of the management of projects that pervades all others. Effective communication is essential for the functioning of any organization. Breakdown in communication contributes to a group of problems that result in low work quality and productivity

According to Emmit and Gorse (2003), most problems encountered in construction are traceable to faulty communication and communication gaps. Typical information and data on construction sites which have to be passed across or communicated from one point to the other include architectural and structural drawings, service drawings, bills of quantities, specifications and the like. It is very important therefore that these vital documents are sent from the right source, through the right medium(a) in forms or formats the receiver can easily comprehend and delivered to the right person who is expected to carry out the task assigned or take action. An effective feedback mechanism is however needed to make room for corrections and to prevent avoidable mistakes on site. However, on-site communication on construction sites comes with its own difficulties and challenges that need to be surmounted. Information or data may be altered at various stages; from the sender's end, during the process of transfer through a medium and finally at the receiver's end. Problems of noise and distortion and the need to overcome these challenges or at least mitigate their negating influence can pose as a serious challenge to all involved in the construction process.

Other options have been exploited over the years to improve the communication processes in the construction industry. The adoption of sophisticated means of gathering, processing, transmitting data and information has thus become necessary (Usman, 2009). Conversely, the ever-changing needs of employers/clients, coupled with the pace at which technological advancements have reshaped world today is re-structuring the way and manner in which on-site communication is carried out. In view of the foregoing, this study aimed to appraise on-site communication and its challenges in the Nigerian construction industry, with a view to ascertaining the best means of improving communication on construction sites.

2.0 LITERATURE REVIEW

2.1 Overview of Construction Site Communication

An effective system for passing on information and instructions and for receiving feedback is essential for successful site management and control (Abdul, 2006; Reinout, 2008; Mohammed, 2010). This system must work both within and among the consultants, contractors, sub-contractors, suppliers and clients who contribute to the design and construction of the final structure. It is therefore necessary to use recognized channels of communication to ensure that all parties to the construction contract get the information they need.

Communication flow in the construction industry according to Barry (1990) is upwards, lateral and downwards. Lateral communication is between people of roughly equal status performing similar task, upward and downward communication on site provides essential feedback to management. It is used to report progress of site works, to make suggestions and also to seek clarifications or help, although people often seek information from their peers before going to their bosses (Barry, 1990). The level of communication and degree of emphasis given to it on the construction site differs from one organizational structure to another. According to Dennis (1972) the skilled craftsmen used to accept simple instructions and expand these to suit their individual needs and conditions by always completing the work successfully on an intuitive basis. Now with so many interdependencies between activities, the instructions must be more explicit; workmen can no longer device ways and means, because they could seriously affect other adjacent activities.

By virtue of the nature and complexity of the Construction industry, communication has to be carried out by different methods and formats depending on the parties involved and the nature and type of information to be passed. Over the years, modern communication systems like electronics have been introduced to augment the previously existing ones. However, whichever communication system is adopted, the value and essence of the information or message to be passed should not be jeopardized.

2.2 Methods of Communication on Construction Sites

Communication on a typical construction site according to Barry (1990) and Reinout (2008) takes place via the following means:

- i. Spoken Communication:** this could be a face-to-face (direct) communication or an indirect telephone call or dictated message. Face-to-face communication is a powerful method, although most people do not use it skilfully. Barry (1990) asserts that spoken communication needs careful planning, clear expression and the ability to arouse the listener's interest and support. Its major drawback is the lack of permanent record and the ease of forgetting vital information. One vital spoken communication adopted on site is site meetings, used to inform, coordinate, allocate task, update plans and check progress.
- ii. Written Communication:** though very vital and important as a means of communication on site, Barry (1990) considers it to be a major feature of a bureaucratic organization. It provides a readily accessible bank of site information and large quantities of documents can be stored and retrieved with ease. Written communication ranges from notes on a scrap paper to formal typeset report. To increase the value of information passed through written communication, it is important to ensure that ideas are limited to sentences, information should also be more direct, monotony and unnecessary words should be avoided.

- iii. **Graphical and Numerical Communication:** Where information being handled is extensive and complex, written information becomes unsatisfactory. Hence, the reliance on graphical and numerical communication, notably in the form of drawings, diagrams, schedules, and charts. A single drawing can convey a great deal of information in a much cheaper way than would be possible using words alone. Drawings are useful as long as they are accurate, easy to understand and supplied at the right time. The bill of quantities use numerical data linked with rightly structured texts to give condensed information. They are expected to fully and accurately describe projects. Bar charts and network diagrams are valuable ways of presenting information which is partly numerical and partly written.
- iv. **Information and Communication Technology:** Reinout (2008) defines communication technology as the use of technologies to communicate with other people. This includes the use of everything from postal services to wireless phones and internet. Suleiman (2008) describes the categories of handheld devices which could be used to communicate on construction sites. They include personal digital assistants (PDAs), tablets, personal computers (PCs) such as note book computers, handheld computers and wearable computers. All these could be used to transmit, collect and distribute information effectively on site. He however noted that the use of communication technology has not been fully exploited.

2.3 Functions of Communication on Construction Sites

Communication serves a variety of functions on the construction site. Barry (1990) highlighted some of these functions below:

- i. **Information exchange:** as information is being exchanged at all times, a manager explains the company policy to an Engineer; a joiner tells an apprentice on site how to prepare a joint. Information passes both ways as the Engineer will tell the manager about a problem with a sub-contractor. The joiner's apprentice will talk about the grievance he has concerning his bonus.
- ii. **Instruments:** on site, workers need to know what they are expected to do, how quickly and how well. Most of the targets are available in drawings, programs and specifications, but the manager needs some skill to communicate them clearly and simply and ensure that they are understood. The manager uses communication to get action; he may ask a sub-contractor to increase his labour strength to finish a job earlier. A foreman will ask for some equipment for a meeting about production target with the manager.
- iii. **Social Relationship:** communication serves the function of maintaining relationships between workers or group of workers on site, so that they continue to work as a team on site. Social contacts help create cooperation among members of a team.

- iv. **Expression:** communication enables people to be able to express their feelings. This may happen spontaneously, like an argument during site meetings.
- v. **Attitude Change:** sometimes a manager may begin by influencing people's attitudes or values. If a worker believes that the firm is exploiting him, the manager is unlikely to get the best from him, unless he is able to change the worker's attitude through communication.

2.4 Reasons why Communication fails on Construction Sites

A number of factors have been attributed to the breakdown of communication on sites. According to Reinout (2008), some of these problems include:

- i. Skipping of communication management or approaching it in a shallow manner due to lack of knowledge in this area.
- ii. Problems related to inter-personal communication on site, problems related to face-to-face meetings and intra-group communication on site such as interaction between team members or inter-group communication such as that between main contractors and sub-contractors.
- iii. Inability to determine project stakeholder's needs for information, inability to determine communication channels in projects, insufficient interaction between project managers and team members or between the main contractors and sub-contractors or within team members, inappropriate communication media.
- iv. Timing or distributing incorrect information to the right stakeholders, wasting a large amount of time and resources on unnecessary meetings and the like.
- v. Inability to combine verbal and non-verbal communication in order to achieve targets.
- vi. Abusive of emotions or emotional outbursts during interaction between project management and team members such as intimidation, instilling fear and threats, aversive stimulation and other similar attitudes.

Other reasons why communication fails on sites as identified by Barry (1990) are:

- i. Poor expression: the communicator does not encode his message clearly because of the difficulties in self-expression, poor vocabulary or even nervousness.
- ii. Overloading: managers often give and receive too much information at once. This causes confusion and misunderstanding. Research has shown that the amount of information a person can cope with at one time is quite limited, especially when the subject matter is unfamiliar and several communication channels (spoken, written and graphical) are used.
- iii. Poor choice of method: people often don't stop to think of how to get their message across, sometimes the spoken word is best, but what is said is quickly forgotten. The written word is often preferred as it leaves a semi-permanent record. A quick sketch may be better than a lot of words. Disjunction and distortion; sender and receiver may not share the same culture or language, dialect, concept, experience, attitude and non-verbal behaviour. Non-verbal clues can have different meanings in different cultures. Messages

- can be misinterpreted because the receiver sees it from his own experience, attitude and expectations.
- iv. Distance: designers are separated from contractors, site and from parent companies. This limits face-to-face communication and non-verbal signals like facial expressions which help the communicator and receiver to judge the response of each other.
 - v. Status differences: people of lower rank of power find it difficult to communicate with those in higher positions. The opposite may happen too. People lower in hierarchy or position may be reluctant to report difficulties or lack of progress.
 - vi. Feelings: how a person feels about a message or about the sender can distort or overshadow its content. In face-to-face communication, the sender may be able to detect this problem, often through verbal responses to the other person.

3.0 METHODOLOGY

This study is a survey research and was conducted in Anambra State, Nigeria. Anambra is one of the thirty-six states in Nigeria. Statistically, this might not be a true reflection of the entire Nigeria. However, in terms of technology, there is no barrier or limit of penetration in any part of the country. So whatever affects one part also transcends to other part of the country. Based on this, the result of this study can be generalised to reflect the views of other construction professionals in Nigeria. Therefore, the target population of this research consists of building construction professionals fully registered with their various professional bodies and practicing in the state. The population of these professionals were obtained from the records available at the government secretariat in Awka the state capital. Thus, the population of this study is 105.

Taro Yamane sample size method was employed to determine the appropriate sample size in this study.

Taro's formula is expressed as:

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

Where "n" is the sample size, "N" is the population (105) and "ε" is the level of confidence (i.e. 95%).

Thus, the sample size

$$n = \frac{105}{1 + 105(0.05)^2} \\ = 84$$

Table 1 shows the population distribution of the respondents and calculated sample size

Table 1. Population distribution of respondents

S/NO	Professionals	Population	Sample size
1	Architects	15	12
2	Builders	34	27
3	Quantity Surveyors	25	20
4	Structural Engineers	32	25
	Total	105	84

Source: Researchers' field survey (2017)

Data was collected via structured questionnaire administered to the selected professionals. Oral interviews were also conducted with some professionals to substantiate the result of this study (See Table 2 for questionnaire distribution and percentage response).

Table 2. Distribution of Questionnaire and Percentage Response

Questionnaires	Frequency	Percentage (%)
Number of questionnaires returned	59	70.00
Number of questionnaires not returned	25	30.00
Total	84	100

Source: Researchers' field survey (2017)

Being a descriptive research, tables and bar charts were used for data presentation. Relative Important Index (RII) was also used for ranking and is computed using the formula below:

$$RII = \frac{\sum Fx}{A * N} \quad (2)$$

Where: $\sum Fx$ = Weight given to each statement by respondents and ranges 1 – 5

A = Higher Response Integer

N = Total Number of Respondents

4.0 RESULTS

4.1 Prevalent Site Communication Methods

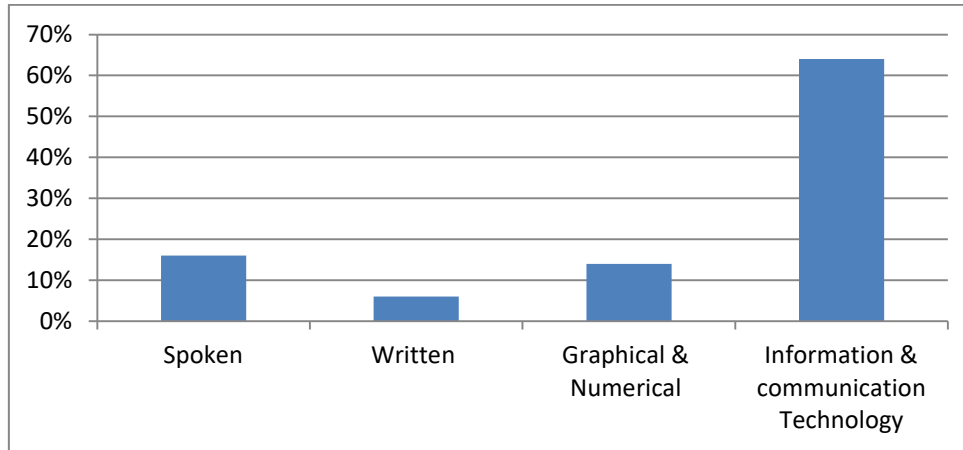


Figure 1. Site Communication Methods

Source: Researchers' field survey (2017)

The respondents shared their views concerning the most suitable between formal and informal communication. They also expressed their sentiments towards the use of ICT, as about 64% of them either agreed or absolutely agreed that ICT should be used on site ahead of the older ones in order to match the fast-changing trend. Although a vast majority of information is exchanged verbally and delegated, most data is exchanged in written format either as hard copy or electronically.

4.2 Utilization of Site Communication Tools

Table 3. Intensity of Utilization of Communication Tools on Construction Sites

Means of Communication	Frequency of Occurrence				(ΣF)	ΣFx	Mean	RII	Rank
	1	2	3	4					
Formal Written									
Project Charter (Contract)	10	12	18	14	54	144	2.67	0.67	6 th
Specification	18	10	27	9	54	155	2.87	0.71	5 th
Project Plan	0	15	15	24	54	171	3.17	0.79	2 nd
Reports	15	16	14	9	54	125	2.31	0.58	12 th
Formal Verbal									
Presentations	18	15	18	3	54	114	2.11	0.53	
Speeches	12	14	17	11	54	135	2.50	0.63	9 th
Informal written									
Memos	18	19	11	6	54	113	2.09	0.52	14 th
Notes	25	18	4	7	54	101	1.87	0.47	15 th
Social Media	4	3	18	29	54	180	3.33	0.83	1 st
Emails	6	11	18	19	54	158	2.93	0.73	4 th
Informal verbal									

Meetings	10	21	14	9	54	130	2.41	0.60	11 th
Conversations	10	17	13	14	54	137	2.54	0.63	9 th
Nonverbal message & Para-verbal messages									
Facial expression	13	10	12	19	54	145	2.69	0.67	6 th
Tones	14	11	11	18	54	141	2.61	0.65	8 th
Voice pace	17	11	18	8	54	125	2.31	0.58	12 th
Postures and gestures	3	15	12	24	54	165	3.06	0.76	3 rd

Source: Researchers' field survey (2017)

From Table 3, it can be observed that social-media platforms with RII of 0.83 ranked first in terms of utilization, closely followed by project plan (0.79) and posture and gestures (0.76). In the same vein, notes (0.43) and memos (0.53) were the least on the list. Thus, social media is gradually becoming the commonest forms of communication in the study area whereas the use of note and memos is gradually fading away. Based on this result, the researchers went further to interview some of the respondents. From their responses, social media is faster, easier and more convenient when compared to notes and memos. Also, with social media one can control your site effectively from any location (i.e. one can clearly communicate to workers at site from any location without being physically present on site and the information will be understood). This according to them is not possible with notes and memos.

4.3 Prevalent Challenges facing Construction Site Communication

Table 4. Barriers to Communication on Construction Sites

Means of Communication	Frequency of Occurrence				(ΣF)	ΣFx	Mean	RII	Ranking
	1	2	3	4					
Hardware;	02	18	16	18	54	158	2.93	0.73	4 th
Procedures;	06	06	23	19	54	163	3.02	0.75	2 nd
Terminology	04	16	18	16	54	154	2.85	0.71	7 th
Training.	05	15	18	16	54	153	2.83	0.71	7 th
Badly expressed messages	07	13	16	18	54	153	2.83	0.71	7 th
Information overload	06	06	21	21	54	165	3.05	0.76	1 st
Difference in background	02	16	17	19	54	161	2.98	0.74	3 rd
Inconsistent verbal and non-verbal communication	03	17	17	17	54	156	2.89	0.72	6 th
Emotional reaction	07	13	17	17	54	152	2.81	0.70	10 th
Noise/distraction	6	11	15	19	54	157	2.91	0.73	4 th

1= Strongly Disagree, 2= Disagree, 3= Agree and 4= Strongly Agree, RII= Relative Importance Index

Source: Researchers' field survey (2017)

Table 4 shows the common challenges of on-site communication. From the response, the most prevalent challenge is information overload (0.76) (i.e. issuing too many information/instructions at same time). Others are procedures/means of communication (0.75), difference in background (0.74) and noise and distraction (0.73). Interestingly, all the variable examines scored 70% and above. This means that all variables examined are somewhat critical in the study area.

4.4 Perception of Respondents on Improvement of Site Communication

Table 5. Respondents’ opinion on the Most Common Means of improving Communicating on Site

Perception	Frequency of Occurrence				(ΣF)	ΣFx	Mean	RII	Ranking
	1	2	3	4					
Communication has a direct bearing/impact on construction outcome	07	06	20	21	54	163	3.02	0.75	1 st
Formal communication is more efficient than informal	03	15	19	17	54	154	2.85	0.71	4 th
ICT should replace other forms of communication on site	06	11	18	19	54	158	2.93	0.73	3 rd
Older forms of communication are relevant but have not been maximized	09	07	22	16	54	153	2.83	0.71	4 th
It is more important to focus on ICT than to improving older forms of site communication	02	16	19	17	54	159	2.94	0.74	2 nd

1= Strongly Disagree, 2= Disagree, 3: Agree and 4= Strongly Agree, RII= Relative Importance Index

Source: Researchers’ field survey (2017)

Results in Table 5, indicates that 75% of the respondents believe that communication has a direct bearing/impact on construction outcome. Also 74% and 73% of the respondents are of opinion that It is more important to focus on ICT than to improving older forms of site communication and ICT should replace other forms of communication on site respectively.

5.0 CONCLUSION AND RECOMMENDATIONS

This study reemphasis the importance and/or need of effective on-site communication in the Nigerian construction industry, because on-site communication affects construction outcome/performance. Based on the results/findings obtained, this study concludes that on-site communication in the Nigerian construction industry is gradually becoming more digitalised, because of the emergence of social media platform. The use of ICT tools for on-site communication stands at 64% and social media 83%, hence, construction practitioners prefer communicating on-site with social media and other ICT tools to use of notes and memo, because it is more convenient, faster and less expensive. However, issues such as information overload, procedures/means of communication, difference in background and noise and distraction which is peculiar with construction works affect on-site communication within the

study area. This study therefore recommends that the best way to control cost of construction is to improve site communication through workshops and seminars to improve the knowledge base of construction workers. Also, adequate communication software customized to attend to site communication challenges should be introduced.

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