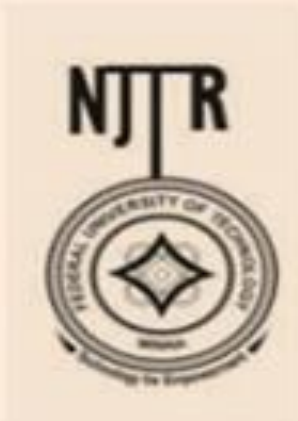


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Impact of Communication Management on the Delivery of Construction Projects in Abuja, Nigeria

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Abstract

Studies have attributed project failure to poor communication management. This research assessed the impact of communication management on the delivery of construction projects in Abuja, with a view to proposing strategies for improving communication management. The quantitative research method was adopted for the study. Data collection was done through questionnaire survey. Analysis of data was carried out using Mean Item Score (MIS) and Relation Importance Index (RII). Results of the study revealed that the most important causes of poor communication management on construction projects range from Poor feedback (RII = 0.89) to Lack of training (RII = 0.82). The influence of communication management on the cost (MIS = 3.80-4.55), time (MIS = 3.83-4.50) and quality (MIS = 3.53-4.25) delivery of construction projects is significant. Based on these findings, it was concluded that the impact of communication management on the delivery of construction projects in Abuja is significant. It was recommended that project managers should avoid the major causes of poor communication management which range from "Ineffective communication channel used" to "Lack of training" in order to minimise potential dispute, misunderstanding and project failures as a result of poor management of communication on project sites.

Keywords: Communication, Communication Management, Construction Projects, Cost, Quality, Time.

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Impact of Communication Management on the Delivery of Construction Projects in Abuja, Nigeria

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Introduction

The role played by the construction industry towards the social and economic development of countries worldwide is very important (Abdullateef *et al.*, 2017). However, it is riddled with complexities and challenges. People from different cultures and professions collaborate in different manners to reach the main goal of project success (Yaser & Abdulrahman, 2018). One of the major challenges of a construction project is the poor communication management and project failure is directly linked to poor communication as it is considered as one of the main challenges in the construction industry (Peter, 2016). Communication is a vital process that entails the transfer of information between the sender and the receiver through a medium, this process is considered successful when the receiver understands the message and supplies the sender with a timely and appropriate feedback (Fred, 2017). The communication process is dynamic, complex and comprised of multiple organisations and shareholders' involvement (Gunhan, 2012). Effective communication management is therefore sought throughout the project life cycle as its role in project success cannot be understated. Communication management skills are vital in order to achieve effective communication as technical skills and experience alone, are not sufficient process (Gunhan, 2012).

According to (Alberto, 2017), communication management is the systematic planning, implementing, monitoring and revision of all

the channels of communication within an organization and between organizations. Communication management is a dynamic and continuous process that runs throughout the project lifecycle and involves many stakeholders. Effective communication must therefore be sought and attained due to its vital role which affects the project's outcome directly and which is a main pillar that leads a project to produce a successful outcome (Alberto, 2017). Its effectiveness during the project's lifecycle aids in achieving multiple objectives and targets successfully. Communication management, according to Gunhan (2012), plays fundamental role in the effectiveness of this process, because if a project participant lacks communication skills, he/she is likely to conduct an ineffective communication management process (Gunhan, 2012).

According to Project Management Institute (PMI) (1996), communication management includes the processes that are required to ensure timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information. PMI (2000) investigated communication management in organisation specifically in construction projects and found that by adopting effective communication during the construction of the project, it can help in meeting the stipulated goals and objective of the projects. Statistics have shown that over 50% of projects in Nigeria are

unsuccessful due to inappropriate communication management system (Kasimu and Usman, 2013). Some professionals, according to Tipli and Ojeba (2014), may not be able to understand some aspects of a project if little information is available thus leading to project failure. Ineffective communication system leads to de-motivated workforce, design errors, slowdown in the entire job and failure in production.

Past studies on communication management have been undertaken in the following areas: role of communication (Olaniran, 2015); issue of communication in the construction industry (Justus *et al.*, 2016); an overview of project communication management in construction industry projects (Hala *et al.*, 2017); challenges of communication (Ishaq, 2018); identification of causes and effects of poor communication in construction industry (Ismail *et al.*, 2018); causes and impact of poor communication in the construction industry (Ayman and Mamoud, 2018) role of communication in leading a successful international project (Le Bui, 2019); and assessment of communication channels in use by professionals on construction projects in Nigeria (Evborkhai and Shittu, 2020). These researches have however been unable to determine the effect of communication management on the delivery of construction projects as a way of identifying improvement strategies to poor communication management. This constitutes a gap that this research seeks to fill in order to address the research problem. This study therefore assessed the impact of communication management on the delivery of construction projects in Abuja, Nigeria with a view to proposing strategies for improving communication management on projects. In order to achieve the aim, the following objectives were pursued:

To examine the causes of poor communication management on construction projects. To

determine the influence of poor communication management on the cost, time and quality delivery of construction projects.

To propose strategies for improving communication management in construction projects.

Literature review

Causes of Poor Communication in Construction Projects

It was found that lack of communication and coordination between design participants of different background recorded higher relative impact to cost overrun in design phase of Egyptian construction industry (Yaser & Abdulrahman, 2018). According to Yaser & Abdulrahman (2018), most construction projects have been affected by poor communication as a result of linguistic barriers, poor coordination and lack of training. According to Oluwaseun (2013), Linguistic barriers; Cultural barriers; Lack of honesty; Poor feedback; Work pressure; Poor coordination; Difference in objectives; Lack of training; Lack of knowledge; Different level of education; Difference in experience; Unclear responsibilities; Unconscious message distortion; Conscious message distortion; and Noise produced on site causing difficulty to hear each other clearly are the common causes of poor communication management on construction projects.

Other causes of poor communication were outlined to be cultural barriers, use of an ineffective communication channel, lack of honesty, poor feedback, work pressure, difference in objectives, lack of knowledge, different level of education, and difference in experience amongst others. All the causes of poor communication in construction projects as discussed from the work of Yaser and Abdulrahman (2018) and other sources in this section are highlighted in Table 1:

Table 1: Highlight of Causes of Poor Communication in Construction Projects.

S/No.	Causes of Poor Communication Management	Source(s)
1	Linguistic barriers	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
2	Cultural barriers	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
3	Lack of honesty	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
4	Poor feedback	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
5	Work pressure	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
6	Poor coordination	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
7	Difference in objectives	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
8	Lack of training	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
9	Lack of knowledge	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
10	Different level of education	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
11	Difference in experience	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
12	Unclear responsibilities	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
13	Unconscious message distortion	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
14	Conscious message distortion	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)
15	The noise produced on site causing difficulty to hear each other clearly	Oluwaseun (2013); Hua, G., Sher, W. & Pheng, L. (2014); Alberto, P. G. (2017); Yaser & Abdulrahman (2018)

Source: Researchers' Compilation from Literature Review (2020)

Identification of causes of poor communication in construction projects, as highlighted in Table 1, is key to making a move to solving the problem of poor and ineffective communication management in construction projects. This was also emphasized by Yaser & Abdulrahman (2018) that lack of communication and coordination between design participants have a high influence on cost overrun in the design phase of a construction project.

Impact of Poor Communication Management on Construction Projects

Chan (1997) identified poor communication among construction parties as one of the significant causes of dispute. Lack of communication skills is considered of the utmost important diffusing factor to cause dispute in construction industry (Loosemore, 1999). Therefore, effective communication is very important to improve the relationship between the project team (Adhan, 2009). Time overrun is also known as delay which is referred as time beyond the completion date assigned in the contract during the inception stage of construction. Time overrun is classified as the most frequent problems in construction industry which in return causes adverse effects

on the project success (Faridi, 2006). Without proper communication on the objective among stakeholders, it can cause delay (Oluwaseun, 2013).

Dispute is a common issue which occurs in the construction industry. It causes an impact on the main project components such as cost, time and quality of construction projects (Gebken, 2006). Dispute is commonly known as an endemic and chronic character of construction industry (Sinha, 2007). It was emphasized by many researchers that poor communication among construction industry is one of the main causative factors of dispute occurrence. It is therefore a major consequence of unsuccessful communication management.

Several studies have revealed that poor communication is one of the main factors contributing to delay in construction. Concept of cost overrun in construction industry means that the project failed financially to achieve its objective (Abdulrahman, 2013) Cost overrun occurs when project's cost exceeds the contract sum and causing major conflict and litigation which might extremely lead to project abandoned or failure (Oluwaseun, 2013). A study by Alhomidan (2010) in Saudi Arabia had identified 41 cost overrun factors in several

road construction projects. It was found that, most of critical factors affecting cost overruns are internal administrative difficulties, poor communication among construction parties, payments deferment, and delays in decision making. It was revealed that lack of communication and coordination between design participants of different background recorded higher relative impact to cost overrun in design phase of Egyptian construction industry. The next section gives a breakdown of the impact of poor communication management on construction projects based on the influence on cost, time and quality delivery rather than the impact on a general note.

Influence of Poor Communication on the Cost, Time and Quality Delivery of Construction Projects

A project delivery method is the method agreed by construction parties to execute construction project and disseminate information in the course of such construction phase towards shared understanding and commonalities. A project delivery method is again defined as “a system used by an agency or owner for organizing and financing designs, constructions, operations, and maintenance services for a structure or facility by entering into legal agreements with one or more parties. Thus, for effective communication and project delivery performance in-terms of time, cost and quality the construction project data must be such that have ease of comprehension, must be sent and get to the intended receiver timely (horizontal communication channel), must be relatively cheap like verbal (face to face for worksite), must perform its purpose (work done to specification), and must have feedback inform of qualitative work.

However, the likely problem that is imminent between the construction parties from non-effectiveness of communication are misunderstanding or incomprehension which might lead fast to further break down of communication that will trigger conflict, arbitration, litigation, delay of project, and possibly project abandonment. Ruuska (1996) reported that communication must be planned for as a resource in projects similar to other resource like time, money, people and equipment. The influence of communication not planned for construction project may result to project underperformance and subsequently makes the project in question to overruns in-

terms of time, cost and quality. “The aspect of quality overruns which is uncommon to many is also a critical aspect that have the influence of time (inform of information delay or misinterpretation of instruction/design/specification) and cost (inform of selection of materials, availability of materials, sourcing of quality materials, inflation) which requires the intervention of an experienced client” (Ruuska, 1996).

The cost on any given construction project can grow significantly as a direct result of poor communication. According to Maslej (2006), project cost can increase due to three main reasons: Incomplete or faulty contract documents; Misinterpretation of contract documents; and Lack of proper project supervision. Lack of proper project supervision can lead to schedule delays and can significantly increase the cost of any given project. Poor communication and inefficiencies between companies is responsible for 30% of design and construction costs, excluding material costs such as concrete, brick and mortar. Construction time delivery can significantly be affected as a result of poor communication; miscommunicated information leads to work being redone or corrected which affects time delivery. In construction, work is organised so that minimal or no time is wasted in the assembly process. To achieve this, trades are scheduled to work consecutively as a team. For example, in a housing project a high labour turnover is employed. The framing crew could be scheduled to start work immediately after the foundation is completed by the concrete crew. If the concrete crew has to correct their work due to miscommunication this in turn will delay the framing crew who will then delay all consecutive crews. Consecutively it only takes a small misunderstanding to lead to significant project delays.

Quality in construction refers to the standard of work that is expected based on the requirements of the contract documents including drawings, specification, contracts, addenda and any additional conditions supplementary to the contract. Maslej (2006) also reported that the purpose of a construction specification is to clearly communicate the owners' expectations to the contractor in a manner that was fair and equitable. It was further reported that well written specification will result in accurate

documents. Although poor project quality is often associated with being the contractor's fault, it is predominantly the mistakes that designers and specification writers make that are responsible for desired project quality not being achieved and also resulting to inefficiencies in contract documents issued by consultants.

The influence of poor communication management on the cost, time and quality delivery of construction projects so far discussed in this section are highlighted in Tables 2, 3 and 4 respectively. This highlight is for ease of identification of the variables required for data analysis and for the achievement of the objectives related to this section of the literature review.

Table 2: Highlights of Influence of Poor Communication Management on the Cost Delivery of Construction Projects.

S/No	Influence of Poor Communication management on Project Cost Delivery	Source(s)
1	Wastages of available resources	Ruuska (1996); Abdulrahman (2013)
2	Wrong estimations leading to extra expenses	Ruuska (1996); Abdulrahman (2013)
3	Misappropriation of the disbursed fund	Maslej (2006)
4	Rework for correcting unsatisfactory work	Ruuska (1996); Maslej (2006); Abdulrahman (2013)
5	Misunderstanding of clients requirements	Chan (1997); Gebken (2006); Sinha (2007)

Source: Researchers' Compilation from Literature Review (2020)

Table 3: Highlights of Influence of Poor Communication Management on the Time Delivery of Construction Projects.

S/No	Influence of Poor Communication management on Project Time Delivery	Source(s)
1	Interference of execution of work	Faridi (2006); Alhomidan (2010); Oluwaseun (2013);
2	Long chain of communication channels leading to slow feedbacks	Faridi (2006); Alhomidan (2010); Oluwaseun (2013);
3	Misunderstanding of clients requirements	Ruuska (1996); Chan (1997); Gebken (2006); Sinha (2007)

Source: Researchers' Compilation from Literature Review (2020)

Table 4: Highlights of Influence of Poor Communication Management on the Quality Delivery of Construction Projects.

S/No	Influence of Poor Communication management on Project Quality Delivery	Source(s)
1	Wastages of available resources	Ruuska (1996); Abdulrahman (2013)
2	Wrong estimations leading to extra expenses	Ruuska (1996); Abdulrahman (2013)
3	Rework for correcting unsatisfactory work	Ruuska (1996); Maslej (2006); Abdulrahman (2013)
4	Change of orders by owner	Maslej (2006)
5	Misunderstanding of clients requirements	Ruuska (1996); Chan (1997); Gebken (2006); Sinha (2007)
6	Design errors	Maslej (2006)
7	Mistakes due to misinterpretation of design drawings	Ruuska (1996); Chan (1997); Gebken (2006); Sinha (2007)

Source: Researchers' Compilation from Literature Review (2020)

In view of the above, it is important to emphasize that the influences of poor communication management on the delivery of construction projects, as respectively highlighted in Tables 2 – 4, are very important. Therefore, effective communication is very important to improve the relationship between the project team and thereby bring about improved project delivery in terms of cost, time and quality in the construction industry. Based on this, the next section discusses the strategies required for improving communication management on construction sites in order to bring about improved cost, time and quality delivery of construction projects.

Strategies for Improving Communication/Communication Management in Construction Projects

Shut (1992) stated that communication network has to be developed within members of the

project team by having a standard method of communication to ensure that the information necessary for decision making gets to where it may be wanted. In view of this, Shut (1992) identified the following as effective strategies for improving communication management in construction projects: Daily meetings with team members, engaging in active listening, providing a good feedback system, having a standard method of communicating, ensuring that drawings are devoid of ambiguities, standardizing methods of exchanging project information, maximizing use of modern communication technology, roles of parties being clear and distinct, using procurement methods such as construction management as against the traditional method, offering technical communication training, avoiding communication in a noisy environment, the increased awareness of the potential for

improving communication, making communication goal oriented, experimenting with communication alternatives, using diverse communication channels, listening and feedback techniques.

In addition, Mehra (2009) reported that overcoming communication issues require a vigilant observation and thoughts of potential barriers in a particular instance of communication. Therefore, the strategies required to overcome barriers will be different in different situations depending upon the type of barriers present.

In the light of the above review of literature on the strategies for improving communication/communication management in construction projects, Table 5 summarises these strategies for ease of identification. In addition, the highlights of the identified strategies for improving communication/communication management in construction projects given in Table 5 will enable the required data for data analysis and achievement of the research objectives related to the literature of this section easy to identify.

Table 5: Highlights of Strategies for Improving Communication Management in Construction Projects.

S/No.	Strategies	Source(s)
1	Daily meetings with team members	Shut (1992); Mehra (2009)
2	Engaging in active listening	Shut (1992); Mehra (2009)
3	Providing a good feedback system.	Shut (1992); Mehra (2009)
4	Having a standard method of communicating	Shut (1992); Mehra (2009)
5	Ensuring that drawings are devoid of ambiguities	Shut (1992); Mehra (2009)
6	Standardizing methods of exchanging project information	Shut (1992); Mehra (2009)
7	Maximizing use of modern communication technology	Shut (1992); Mehra (2009)
8	Roles of all parties to be clear and distinct	Shut (1992); Mehra (2009)
9	Using procurement methods such as construction management as against the traditional method	Shut (1992); Mehra (2009)
10	Offering technical communication training	Shut (1992); Mehra (2009)
11	Avoid communication in a noisy environment	Shut (1992); Mehra (2009)
12	The increased awareness of the potential for improving communication	Shut (1992); Mehra (2009)
13	Making communication goal oriented	Shut (1992); Mehra (2009)
14	Experiment with communication alternatives	Shut (1992); Mehra (2009)
15	Using diverse communication channels, listening and feedback techniques	Shut (1992); Mehra (2009)

Source: Researchers' Compilation from Literature Review (2020)

Critically studying the above strategies, it is obvious that the ability to identify and implement the most effective and modern means of communication on construction projects is key to the improvement of communication management on construction projects. Hence, the improvement of the cost, time and quality delivery of construction projects.

Materials and Method

The study adopted a survey design approach using quantitative data. Creswell (2003) defined quantitative research as the one in which the investigator primarily uses both positivist and post positivist claims for developing knowledge on the truth about quantitative measures and employs strategies of inquiry such as experiments and surveys and collects data on predetermined instruments that yield statistical data. Naoum (1998) provides an example of quantitative methods as particularly important in businesses" where managers often talk about improving productivity, increasing return on investment, scheduling production, and forecasting demand, increasing customer service. Since, the study is also talking about

the improvement of construction business through the use of effective communication management on sites, the quantitative research approach is therefore adopted.

Structured questionnaire was employed for data collection. The closed ended questionnaire format was adopted because the questions are basically short, requiring the respondent to provide 'yes' or 'no' response, or based on a five-point Likert's Scale. The questionnaire was therefore designed on a five-point Likert's Scale format. The questionnaire contains five sections. The first section of the questionnaire covered the profile of respondents while the four other sections dealt with the research objectives respectively. The structure of the questionnaire were obtained from the review of literature carried out in this study.

The study population is made up of construction firms registered with the Federation of Construction Industry (FOCI) with Abuja's business address. FOCI was incorporated in 1954 and it is a mixture of indigenous, indigenized and foreign enterprises (FOCI, 2012). Only about 84 of these are full time members which are construction firms

across Nigeria. Of this 84, only 25 are active or domicile in Abuja (FOCI Directory, 2019). Since the study area is Abuja, then the 25 construction firms registered with FOCI and based in Abuja were considered for the study. The research population size is therefore 25. Because of the fact that the population size is small, this study took a census of the whole 25 construction firms registered with FOCI for data collection. This is in line with the assertion of Watson (2001) that if the population size is small (200 or less), then it is preferable to take a census of the total population. In view of this, the copies of the questionnaire were administered to the professionals of twenty-five (25) construction firms registered with FOCI with Abuja's business address. For this

purpose, Architects, Builders and Quantity Surveyors of each of these firms were considered making a total of 75 copies of questionnaire which were administered (3 copies of questionnaire to each construction firm). This is because these professionals are more involved in the management of construction projects in Nigeria.

To achieve the aim and objectives of this study, descriptive method of data analysis was employed. Descriptive analytical techniques employed include percentile, Relative Importance Index (RII) and Mean Item Score (MIS). Decision rules that were used for the RII and MIS in this study are summarized in Table 6.

Table.6: Decision Rule for RII and MIS Analyses

Scale	Cut-Off Point		Interpretation		
	RII	MIS	Level of Importance	Level of Significance	Level of Effectiveness
5	0.81 - 1.00	4.51 - 5.00	Very Important	Very Significant	Very Effective
4	0.61 - 0.80	3.51 - 4.50	Important	Significant	Effective
3	0.41 - 0.60	2.51 - 3.50	Fairly Important	Fairly Significant	Fairly Effective
2	0.21 - 0.40	1.51 - 2.50	Less Important	Less Significant	Less Effective
1	0.00 - 0.20	1.00 - 1.50	Not Important	Not Significant	Not Effective

Source: Adapted and Modified from Shittu *et al.* (2015)

Relative Importance Index (RII)

RII is being ranked from 0.00 to 1.00 and the numbers in this range have their decision rule as shown in Table 1. The formula for computing RII is given as equation 1.

$$RII = \frac{\sum W}{A \times N} \dots\dots\dots (1)$$

Where: Σ = Summation, W = the weights of every one of the factors given by respondents and it was in the range of (1 - 5), (A=5) the largest value of weight (i.e. Highest factor) and finally N refers to the Total number respondents.

Mean Item Score (MIS)

MIS is being ranked from 1.00 to 5.00 and the numbers within this have their decision rule as shown in Table 1. The formula for Mean item score (MIS) is presented as equation 2.

$$MIS = \frac{\sum W}{N} \dots\dots\dots (2)$$

Where: Σ = Summation, W = Weight, and N = Total number respondents

Results and discussion

This section presents and discusses the results of this study by linking the results to existing findings in the literature.

Response Rate

In order to achieve the objectives of the research, data were collected with the aid of structured questionnaire which were administered to some professionals. This formed the basis on which the conclusion and recommendations were drawn. Copies of the questionnaire were sent to 75 professionals consisting of Architects, Builders and Quantity Surveyors of which 40 responses were received giving a response rate of 53.33%. The responses were further analysed to determine the profile of respondents.

Respondents' Profile

This section presents the profile of respondents considered for data collection. These are presented in Table 7.

Table 7: Respondents' Profile

Profession of Respondents	Frequency	Percentage
Architects	12	30
Builders	10	25
Quantity Surveyors	18	45
<i>Total</i>	<i>40</i>	<i>100</i>
Type of Organisation of Respondents	Frequency	Percentage
Clients	0	0
Consultancy Firms	0	0
Construction Firms	40	100
<i>Total</i>	<i>40</i>	<i>100</i>
Years of Experience of Respondents	Frequency	Percentage
1 - 5 Years	9	22.5
6 - 10 Years	18	45
11 - 15 Years	9	22.5
16 - 20 Years	2	5
21 - 25 Years	2	5
<i>Total</i>	<i>40</i>	<i>100</i>

Source: Researcher’s Analysis of Data (2020)

Table 7 shows that 85%, which is the majority of the professionals are Quantity Surveyors (18 professionals), followed by Architects (12no) constituting 30%. The least number of professionals are Builder ten (10) in number (25% of respondents). It was also indicated in Table 7 that all the respondents are from construction firms. This implies that the result will be useful for this study. Table 7 also revealed that majority of the respondents have between 6 and 10 years of experience (that is 18 professionals; equivalent to 45% of respondents). Nine of the professionals have between 1 and 5 years and 11 – 15 years of

experience respectively (equivalent to 22.5% of respondents). Two of the respondents (equivalent to 5% of respondents) have years of experience ranging from 16 – 25 and another two have 26 – 30 years of experience. This implies that respondents are experienced enough to provide reliable information required for the study.

Causes of Poor Communication Management on Construction Projects

Results of the causes of poor communication management on construction projects is presented in Table 8

Table 8: Causes of Poor Communication Management on Construction Projects.

S/No.	Causes of Poor Communication	RII	Rank	Decision
1	Ineffective communication channel used	0.89	1 st	Very important
2	Poor feedback	0.89	2 nd	Very important
3	Poor coordination	0.88	3 rd	Very important
4	Linguistic barriers	0.82	4 th	Very important
5	Lack of training	0.82	5 th	Very important
6	Difference in objectives	0.79	6 th	Important
7	Lack of knowledge	0.79	7 th	Important
8	Unclear responsibilities	0.78	8 th	Important
9	Difference in experience	0.76	9 th	Important
10	Cultural barriers	0.74	10 th	Important
11	Different level of education	0.73	11 th	Important
12	Work pressure	0.72	12 th	Important
13	Unconscious message distortion	0.70	13 th	Important
14	Conscious message distortion	0.67	14 th	Important
15	The noise produced on site causing difficulty to hear each other clearly	0.61	15 th	Important
<i>Average RII</i>		<i>0.77</i>		<i>Important</i>

Source: Researcher’s Analysis of Data (2020)

Table 8 indicates five very important causes of poor communication management on construction projects ranging from ineffective communication channel used (RII = 0.89) to Lack of training (RII = 0.82). The remaining ten causes of poor communication management on construction projects are shown to be important. These range from “Difference in objectives” and “The noise produced on site causing difficulty to hear each other clearly”

with RII of 0.79 and 0.61 respectively. Averagely, all the identified causes of poor communication management on construction projects are important with average RII of 0.77. This aligns with what was highlighted by Yaser and Abdulrahman (2018) who stated that the main causes of poor communication on construction projects were poor channel of communication, linguistic barriers, poor coordination and lack of training. In addition,

Yaser and Abdulrahman (2018) also emphasized that lack of communication and coordination between design participants have a high influence on cost overrun in the design phase of a construction project. The identification of the causes of poor communication in construction projects is therefore key to making a move to solving the

problem of poor and ineffective communication management in construction projects.

Results of Influence of poor communication management on the cost, time and quality delivery of construction projects.

In Table 9 MIS results of the identified influence of poor communication management on the cost delivery of construction projects.

Table 9: Influence of Poor Communication Management on the Cost Delivery of Construction Projects

S/No	Influence of Poor Communication management on Project Cost Delivery	MIS	Rank	Decision
1	Wrong estimations leading to extra expenses	4.55	1st	Very Significant
2	Misappropriation of the disbursed fund	4.40	2nd	Significant
3	Wastages of available resources	4.38	3rd	Significant
4	Misunderstanding of clients requirements	3.90	4th	Significant
5	Rework for correcting unsatisfactory work	3.80	5th	Significant
<i>Average MIS</i>		<i>4.21</i>		<i>Significant</i>

Source: Researchers' Analysis of Data (2020)

Table 9 shows the results of the five (5) main influences of poor communication management on the cost delivery of construction projects from review of literature. The most significant influence of poor communication management on the cost delivery of construction projects in Abuja is wrong estimations leading to extra expenses with MIS value of 4.55. Other highly significant influences shown are Misappropriation of the disbursed fund (MIS = 4.40) and Wastages of available resources (MIS = 4.38). Misunderstanding of clients' requirements with MIS of 3.90 and Rework for correcting unsatisfactory work with MIS of 3.80 are also shown to have significant influence on the cost delivery of construction projects as a result of poor communication management on site. All identified influences of poor communication management on cost delivery of construction projects in Abuja are significant. Average MIS value observed is

4.21. The finding here is in line with that of Maslej (2006) where it was reported that cost on any given construction project can grow significantly as a direct result of poor communication. This project cost, according to Maslej (2006), can increase due to three main reasons: Incomplete or faulty contract documents; Misinterpretation of contract documents; and Lack of proper project supervision. Lack of proper project supervision can lead to schedule delays and can significantly increase the cost of any given project. Maslej (2006) stated further that poor communication and inefficiencies between companies is responsible for 30% of design and construction costs.

Table 10 presents the MIS results of the identified influence of poor communication management on the time delivery of construction projects.

Table 10: Influence of Poor Communication Management on the Time Delivery of Construction Projects.

S/No	Influence of Poor Communication management on Project Time Delivery	MIS	Rank	Decision
1	Interference of execution of work	4.50	1st	Significant
2	Long chain of communication channels leading to slow feedbacks	4.25	2nd	Significant
3	Wastages of available resources	4.00	3rd	Significant
4	Misunderstanding of clients requirements	3.83	4th	Significant
<i>Average MIS</i>		<i>4.15</i>		<i>Significant</i>

Source: Researchers' Analysis of Data (2020)

The four identified influences of poor communication management on time delivery of construction projects in Abuja are significant (average MIS = 4.15. Most significant influence of poor communication management on time delivery of construction projects is Interference

of execution of work with the highest MIS value of 4.50. This is followed by Long chain of communication channels with a high MIS value of 4.25. Third ranked influence is Wastages of available resources with MIS value of 4.00. Least ranked influence of poor

communication management on time delivery of construction projects is Misunderstanding of client's requirements with MIS value of 3.83. The findings of the study of Maslej (2006) also agrees with the finding of this study in this case. This is because the study of Maslej (2006) found that construction time delivery can significantly be affected as a result of poor communication due to the fact that miscommunicated information leads to work being redone or corrected which affects time

delivery. Therefore, Interference of execution of work; Long chain of communication channels; Wastages of available resources and Misunderstanding of client's requirements due to poor communication results into a significant influence on the time delivery of construction projects.

Table 11 presents the MIS results of the identified influence of poor communication management on the quality delivery of construction projects.

Table 11: Influence of Poor Communication Management on the Quality Delivery of Construction Projects.

S/No	Influence of Poor Communication management on Project Quality Delivery	MIS	Rank	Decision
1	Design errors	4.25	1st	Significant
2	Misunderstanding of clients' requirements	3.85	2nd	Significant
3	Mistakes due to misinterpretation of design drawings	3.85	2nd	Significant
4	Wastages of available resources	3.78	4th	Significant
5	Change of orders by owner	3.65	5th	Significant
6	Wrong estimations leading to extra expenses	3.58	6th	Significant
7	Rework for correcting unsatisfactory work	3.53	7th	Significant
<i>Average MIS</i>		<i>3.78</i>		<i>Significant</i>

Source: Researchers' Analysis of Data (2020)

It revealed seven (7) major influences of poor communication management on the quality delivery of construction projects. The most significant influence of poor communication management on the quality delivery of construction projects in Abuja is Design errors (MIS = 4.25). This is followed by Misunderstanding of client's requirements and Mistakes due to misinterpretation of design drawings with MIS value of 3.85 each. The fourth ranked influence is Wastages of available resources (MIS = 3.78). The next ranked influence is Change of orders by owner (MIS = 3.65). The least ranked influences are: Wrong estimations leading to extra expenses and Rework for correcting unsatisfactory work with MIS values of 3.58 and 3.53 respectively. On the average, all the identified influences of poor communication management on the quality delivery of construction projects in Abuja are significant (average MIS = 3.78). Although, the influence of poor communication management on the quality delivery of construction projects is less significant compared with influences on cost and time delivery. The finding of this study in this case is in line with that of Ruuska (1996) who reported that the aspect of quality overruns which is uncommon to many is also a critical aspect that have the influence of time (inform of information delay or miss-interpretation of instruction/design/specification) and cost (inform of selection of materials, availability of

materials, sourcing of quality materials, inflation) which requires the intervention of an experienced client. Findings from the study of Maslej (2006) also agrees with the finding of this study. This is because the study of Maslej (2006) revealed that poor project quality is often associated with being the contractors' fault, it is predominantly the mistakes that designers and specification writers make that are responsible for desired project quality not being achieved and also resulting to inefficiencies in contract documents issued by consultants. Therefore, for effective communication and project delivery performance in-terms of time, cost and quality the construction project data must be such that have ease of comprehension, must be sent and get to the intended receiver timely (horizontal communication channel), must be relatively cheap like verbal (face to face for worksite), must perform its purpose (work done to specification), and must have feedback inform of qualitative work.

Strategies for Improving Communication Management in Construction Projects

Table 12 presents the results of the strategies for improving communication management in construction projects.

Table 12: Strategies for Improving Communication Management in Construction Projects.

S/No.	Strategies for Improving Communication	MIS	Rank	Decision
1	Having a standard method of communicating	4.35	1 st	Effective
2	Daily meetings with team members	4.20	2 nd	Effective
3	Roles of all parties to be clear and distinct	4.18	3 rd	Effective
4	Standardizing methods of exchanging project information	4.15	4 th	Effective
5	Ensuring that drawings are devoid of ambiguities	4.13	5 th	Effective
6	Engaging in active listening	4.08	6 th	Effective
7	Providing a good feedback system.	4.05	7 th	Effective
8	Maximizing use of modern communication technology	3.88	8 th	Effective
9	Avoid communication in a noisy environment	3.65	9 th	Effective
10	Making communication goal oriented	3.48	10 th	Fairly Effective
11	Offering technical communication training	3.45	11 th	Fairly Effective
12	Using diverse communication channels, listening and feedback techniques	3.40	12 th	Fairly Effective
13	The increased awareness of the potential for improving communication	3.20	13 th	Fairly Effective
14	Using procurement methods such as construction management as against the traditional method	3.08	14 th	Fairly Effective
15	Experiment with communication alternatives	3.08	15 th	Fairly Effective
<i>Average MIS</i>		<i>3.76</i>		<i>Effective</i>

Source: Researcher's Analysis of Data (2020)

Table 12 shows that 9 of the 15 identified strategies for improving communication management in construction projects are effective. These range from “Having a standard method of communicating” (MIS = 4.35) to “Avoid communication in a noisy environment” (MIS = 3.65). The nine strategies remaining are shown to be fairly effective with MIS ranging between 3.48 (Making communication goal oriented) and 3.08 (Experiment with communication alternatives). Average MIS observed was 3.76 which indicates that all the identified strategies for improving communication management in construction projects are effective on the average. These findings align with the view of Shut (1992) that communication network has to be developed within members of the project team by having a standard method of communication to ensure that the information necessary for decision making gets to where it may be wanted. Therefore, the ability to identify and implement the most effective and modern means of communication on construction projects is key to the improvement of communication management on construction projects. Hence, the improvement of the cost, time and quality delivery of construction projects.

CONCLUSION AND RECOMMENDATIONS

Findings from the study led to some vital conclusions towards addressing the problem of poor communication management in the delivery of construction projects in Abuja. These conclusions are stated in this section.

All the causes of poor communication management identified are important but the most important causes range from “Ineffective communication channel used” to “Lack of training”. Influence of communication management on the cost, time and quality delivery of construction projects is significant. But the influence of communication management on the cost delivery of construction projects is the most significant. The strategies for improving communication management in construction projects are all effective. It can therefore be concluded that the impact of communication management on the delivery of construction projects in Abuja is significant.

Based on the findings and conclusions of this study, it is recommended that project managers should avoid the major causes of poor communication management which range from “Ineffective communication channel used” to “Lack of training” in order to minimise potential dispute, misunderstanding and project failures as a result of poor management of communication on project sites. Finally, professionals should adopt a standardized method of communication on projects sites which will enhance project delivery also upward, downward and lateral communication channel should be encouraged and used effectively on site in order to enhance construction project delivery.

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