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IMPROVING COMMUNICATION ON CONSTRUCTION SITES: THE CASE OF SELECTED CONSTRUCTION SMES IN GHANA

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ABSTRACT

Construction stakeholders from various disciplines rely on various communication channels to ensure that a construction project is completed on time, within budget, and to the desired quality. However, the majority of construction SMEs have paid less attention to improving effective communication on construction sites, resulting in poor performance and work productivity. Therefore, the research reported in this paper is to investigate the underlying factors that contribute to communication inefficiencies among SME construction firms and to develop modalities for improving effective communication between industry stakeholders in the construction industry. The study employed a quantitative approach, which included reviewing secondary data and collecting primary data via a structured questionnaire survey distributed to 125 construction professionals working with SMEs in Ghana, who were chosen using a snowball sampling technique. The mean ranking technique, Kruskal-Wallis test, and exploratory factor analysis (EFA) were among the statistical analyses used to analyse the data. According to the findings, the top three underlying factors contributing to communication problems are attitudinal barriers, unclear objectives, and a lack of technological advancement. The EFA classified the 12 effective communication modalities into three categories: effective abstract communication and feedback; stakeholder integration and unambiguous communication; and information accuracy. The study broadens construction professionals' perspectives on recognising and prioritising modalities for improving effective communication during construction project delivery. Prioritising the various communication modalities may serve as a framework for developing tailored communication system dynamics, tools, and protocols for evaluating the effectiveness of communication by SME construction firms in project delivery on a regular basis.

Keywords: Communication, Construction industry, Construction SMEs, Project performance, Modalities

INTRODUCTION

The construction industry is notorious for the poor communication between its organisations and individuals. According to Dainty et al. (2007), maintaining effective communication in the construction industry is a daunting task as a result of the multifaceted nature of construction projects and the considerable amount of information required daily. In a similar vein, Gamil and Rahman (2017) maintain that effective communication is important to overcoming the complicated, fragmented, dynamic nature of the construction industry, as well as the adverse relationship amongst the different parties in the construction industry. Nonetheless, the industry is constrained with significant challenges in terms of ensuring effective and successful communication right through from the project inception to completion, which leads to project failure (Gamil and Rahman, 2017). Gorse and Emmitt (2003) corroborate this, stating that effective communication has not received adequate attention in the construction industry, particularly among SME contractors, resulting in many gaps in information distribution. Communication in construction can be accomplished through request for information (RFI), site instructions, signs, drawings, symbols, posters, and word, all of which allow members of an organisation to send and receive information as well as send information to the general public. Poor communication, on the other hand, has a wide range of ramifications in the construction industry, including rework, cost overruns; schedule overruns; reduced profit margins; disputes and eventually; project failure (Gamil & Rahman, 2023; Rashid, 2020; Smith et al., 2021; Famiyeh, Amoatey, Adaku & Agbenohevi, 2017; Simpeh, 2012). Furthermore, communication issues can have a negative impact on safety outcomes (Lyu et al., 2023).

Because the construction industry is a team effort comprising the client, consultants (design team), and the construction team (contractor), communication is said to be effective within a working organisation in the construction industry only when the transmitted ideas produce the desired result (Ishaq, Omar, Yahya & Sarpin, 2019). The operational approaches and other management activities related to the design, construction, and subsequent performance of a building are heavily reliant on how information is communicated between the various project participants. As a result, the communication method should not only clarify problems but also try to bring harmony to the entire work process and foster cooperation among the parties to ensure maximum contribution. Because construction brings workers together, having open and clear communication during construction aids in completing projects in less time and at a lower cost. Delays in responding to information requests and distributing change orders, on the other hand, can result in rework, additional work, and longer completion times.

According to Ogbu and Olatunde (2019), Small and medium-sized enterprises (SMEs) are critical to the growth of construction industry and a suitable source of employment globally. This is corroborated by Sogaxa et al. (2021), who opined that SMEs contribute significantly to the growth of the economy and the development of the construction sector in developing countries. Adjarko et al. (2016) maintained that SME construction firms account for a significant portion of the Ghanaian economy. Furthermore, SMEs are the backbone of the Ghanaian economy (Offei, Kissi & Nani 2019), accounting for approximately 85% of businesses and contributing approximately 70% of Ghana's GDP (International Trade Centre, 2016). Although SMEs are recognised for their significant contribution to national socio-economic development, their survival rate

is largely constrained by several factors that affect their operation (Abor & Quartey, 2010). Poor communication structures are one of the major challenges (e.g. Offei et al., 2019; Mehr & Omran, 2013; Abor & Quartey, 2010). Previous studies on communication in construction in Ghana over the last few decades have concentrated on communication barriers in megaprojects and communication performance challenges in public private partnership (PPP) projects and communication ineffectiveness inherent in mass housing project (Akunyumu et al., 2019; Kwofie et al., 2019; Kwofie et al., 2017). However, there has been little focus on effective typologies for improving communication on construction sites, particularly among SME construction firms in developing countries such as Ghana. Therefore, conducting a study to investigate the underlying factors that contribute to communication inefficiencies among SME construction firms and to develop modalities for improving effective communication in the delivery of construction projects in a developing country such as Ghana is valuable.

Literature Review

Barriers to Communication on Construction Site

Empirical evidence revealed that there are various factors that contribute to communication barriers on construction sites. Various authors have categorised the factors into psychological, emotional, physical, cultural, attitudinal, organisational structure barriers, and technological barriers (Berko, 2010; Reid, 2018; Gratis, 2018; Akunyumu et al., 2019; Uwatt & Timothy, 2022; Drago, 2015). Psychological barriers, according to Berko (2010), address mental and psychological issues that may act as impediments to effective communication. Some people, for example, have stage fright, speech disorders, depression, impaired eyesight, hearing problems, illness, and pain, all of which can interfere with effective workplace communication. According to Berko (2010), in most cases, these conditions are difficult to manage and can lead to ineffective communication on the job site.

Reid (2018) claims that a person's emotional intelligence quotient (EIQ) determines how easily and comfortably they can communicate. For instance, an employee who is emotionally matured will be able to communicate effectively. On the other hand, employees who allow their emotions to take control, will face difficulties. Therefore, effective communication requires a perfect balance of emotions and facts. Anger influences how the brain processes information. Emotions such as anger, frustration, and humour can limit the effectiveness of communication and obscure a person's decision-making abilities (Reid, 2018). According to Gratis (2018), physical barriers include, but are not limited to, noise and closed doors. These are the most ubiquitous physical problems to effective communication. According to Gratis (2018), there can be significant obstacles to effective communication in large offices because of physical distance between co-workers and faulty equipment.

Cultural challenges, according to Akunyumu et al. (2019), are one of the industry's communication barriers that require immediate attention and resolution. According to Halos (2007), as we now live in a global world, most organisations may prefer to engage employees across the globe to boost the reputation of their businesses. Consequently, it is imperative to consider the culture background when communicating (Halos, 2007). Communication can be hampered by cultural barriers in a variety of ways, including, but not limited to, differences in personal space and communication norms. In these circumstances, finding common ground is crucial. Employees might make assumptions about the other person's culture based on stereotypes. Companies

have different work cultures, so in order to communicate effectively, you must adapt to your company's culture. Cultural differences can be seen in a wide range of everyday behaviours and beliefs, such as those found in the workplace (Rampur, 2011). Attitudinal barrier may manifest itself in form ego and inconsiderate behaviours and anger affects the way in which the brain processes information (Reid, 2018). These employees can put extreme strain on the communication channels in which they work (Glenn, 2012). Certain personality traits, such as shyness, aggression, laziness, anger, and social anxiety, may be eliminated through courses and proper training. However, some issues, such as selfish behaviour, may be unfixable.

Organisational barriers, according to Essien (2018), are problems with hierarchical structures, such as inefficient information systems and a lack of supervision. Essien (2018) further lamented that communication problems in the workplace may be associated with firms that have poor organograms in terms of hierarchy. Employees may be unaware of their roles in the chain of command, for example, if they have an inefficient communication system and channel for disseminating information. If a company has a complex structure with many management stages, information will be lost or misinterpreted as it travels through each layer of the channel. Drago (2015) identified technological barriers as a factor influencing effective on-site communication. According to Drago (2015), technology is advancing at a faster rate, making it difficult to keep up with modern technologies. Accordingly, technological advancement can sometimes be a hindrance. For instance, faulty communication equipment may impede communication flow among construction professionals (Gratis, 2018). Additionally, the cost of modern technology is sometimes prohibitively expensive, and most SMEs will be unable to afford such technology for communication purposes (Drago, 2015)

Overcoming the Barriers to Effective Communication

Various authors have highlighted different modalities that can be adopted to overcoming the barriers to effective communication on construction sites. For instance, Qureshi (2016) indicated that one of the ways is by eliminating differences in perception. Another modality identified by Colman (2015) is avoiding information overload, therefore managers should plan well by prioritising tasks to be completed. The author also emphasised the importance of devoting quality time to understanding problems and receiving feedback from subordinates in order to take corrective action. Not only does information overload slow down the employees' productivity, it also affects their ability to make appropriate decisions. According to Lafont (2020), establishing clear lines of communication is another effective way of overcoming the barriers to effective communication on construction sites. It is crucial to establish a clear line of communication and establish a chain of command in a construction project. When a contract is established between the principal contractor and the client, channels of communication become clear. The principal agent serves as a conduit for communication between the contractor and the client (owner). The contract documents, comprising the drawings, specifications, bill of quantities, and form of contract, serve as the foundation for all construction communication. Additionally, the principal agent is responsible for coordinating the activities of the other members of the design team and the construction team via effective communication. Furthermore, any changes to the contract should be well documented via an architect's instruction; however, this must be extensively discussed and communicated to all

parties involved in the project. Failure to take this approach in reporting contract changes may result in time and cost overruns on site; as a result, it is important to maintain regular communication among all project participants (Lafont, 2020).

Bendell (2015) opines that choosing an appropriate method of communication is important in terms of overcoming the barriers to effective communication on construction sites. The author highlighted that there are several ways of communicating, which may be by the use of videos, phones, texting, or email. For instance, communication on site may be in the form of signals, drawings, signs, photos, and also through face-to-face meetings. Maritz and Hattingh (2015) maintain that users of modern communication channels, particularly those that involve email, must correctly understand whether their method of choice has any contractually binding or otherwise enforceable effects. Walter (2018) stated that recipient of information should avoid giving negative feedback but should rather provide constructive feedback as this will help in terms of overcoming barriers to effective communication on construction site.

Walter (2018) postulated that even if the feedback is negative, it should be constructive in order to avoid demotivating employees. Maintaining two-way communication channels between superiors and subordinates allows for constructive feedback. The purpose of communication will be ineffective if feedback isn't taken from the receiver because feedback allows the receiver to judge how effective the message has been. Feedback is a tool used in the workplace to reinforce positive behaviour and support behavioural changes (Walter, 2018; Kellyn, 2015). Lyu et al. (2023) identified three groups of factors that can be adopted to enhance the construction industry ethnic minority workers' safety communication on-site, these include worker-related, manager-related, and organisation-related safety communication factors

The Significance of Communication on Construction Site

When construction projects are being carried out, communication aids in relationship formation and maintenance. Relationships are at the core of every business deal (Malik, Taqi, Martins, Mata, Pereira & Abreu, 2021). Many people base their decisions on relationships and trust. It helps us establish trust and forge enduring bonds with our colleagues when we are open, honest, and dependable in our communication. Ejohwomu et al. (2017) add that effective communication prevents barriers from developing among individuals (workers) within the construction industries that might affect the productivity on site. Hackman, Johnson and Crais (2011) posit that communication helps develop morale and strengthens teams. Additionally, communication enhances team management. Effective project managers are able to articulate the project's goals and intentions. They offer suggestions, potential solutions, and assistance in getting rid of obstacles that construction team face. Team members can recognise and learn from managers who communicate clearly. Management establishes the tone for productive project communication, which in turn promotes results. Effective management is essential in communication for guiding teams and lifting their confidence during times of disruption and uncertainty (Half, 2010). Also, communication creates loops of feedback. According to Benria (2019) and Dixit (2008), feedback also builds up the skills of an individual. Feedback allows the sender of the message to judge how effective the message is or not in order to improve on his performance in a way that is effective and maintains growth.

METHODOLOGY

The study adopts the quantitative methodological approach to achieve the purpose of the study. Both secondary and primary sources were used to collect the data. With respect to the secondary data, pertinent literatures appertaining to barriers to communication, overcoming the barriers to effective communication and enhancing effective communication on construction site were reviewed. Primary data were collected through a survey using a structured questionnaire. Basically, The questionnaire was grouped into four sections which included; section A which provides information about the respondent's profile. This is followed by section B which examined the barriers to communication. Section C examined modalities in terms of overcoming the barriers to effective communication. Section D continued by examining the factors that enhance effective communication on building sites. A five point Likert scale was adopted where 1=strongly disagree, 2= disagree, 3=neither agree nor disagree (neutral), 4=agree, and 5= strongly agree and enables the respondent to indicate their level of agreement by ticking the appropriate cells provided in the tables.

The "Ministry of Water Resources, Works, and Housing (MWRW&H) of Ghana groups the classification of construction firms in partnership with the Registrar General's Department," (Oduro, 2020). According to Oduro (2020), D1K1 contracting firms are classified as large firms, while D2K2 contracting firms, D3K3 and D4K4 contracting firms are classified as medium and small firms, respectively. However, this study concentrated on contracting firms classified as SMEs (D4K4, D3K3, and D2K2) in the Greater Accra region of Ghana (Oduro, 2020). Therefore, the population consisted of construction professionals employed by these types of contracting firms. The sample strata consist of architects, supervisors, quantity surveyors, and project managers. The snowball sampling method was used for this research project. The rationale for choosing this approach stems from the difficulty in identifying the various respondents, particularly active SME construction firms in the Greater Accra region of Ghana.

The questionnaires were administered in two ways. In the first approach the questionnaire was administered to respondents who were available on site through face-to-face. Whereas the second approach the questionnaire was administered to other respondents via email. In all, a total of 125 questionnaires were duly completed and returned. The data obtained were captured into SPSS version 26 and subsequently analysed using both descriptive and inferential statistics. With respect to the background information, frequencies and percentages were used in presenting the findings, whereas the mean ranking technique was adopted to analyse and rank the barriers, modalities for overcoming the barriers and factors enhancing effective communication in a hierarchical order. Regarding the inferential statistics, the Kruskal-Wallis H test was employed to interrogate the level of consensuses amongst the different professional backgrounds regarding the barriers and modalities to overcome the barriers. Because the data set did not meet the stringent assumptions of the parametric technique, the non-parametric technique was useful in examining the level of agreement among the various professional backgrounds (Pallant, 2020). The normality tests for barriers to effective communication and factors to overcoming barriers to effective communication yielded $p = 0.000$. Because the obtained significance value of 0.00 indicates a violation of the assumption of normality (Pallant, 2020), the comparison was computed using the non-parametric Kruskal-Wallis test. Subsequently, the EFA was employed to classify the underlying

structure of the key components enhancing effective communication on construction site. Cronbach's alpha values were used to assess the internal reliability of the scale questions (Kolbehdori & Sobhiyah, 2014). According to Taber (2018), the acceptable Cronbach's alpha values would range from 0.60 to 0.95. Notably, the alpha values presented in Table 1 for barriers to effective communication (0.783), factors that assist in overcoming the barriers to effective communication (0.789), and factors that assist in enhancing effective communication on site (0.887) met the requirement as indicated by Taber (2018). The implication is that the five-point Likert scale measurements were reliable.

Table 1: Reliability test

Factors	No. of variables	Cronbach's alpha	Remark
Barriers to effective communication on construction site	6	0.783	Moderately reliable
Factors that assist in overcoming the barriers to effective communication	6	0.789	Moderately reliable
Factors that assist in enhancing effective communication on site	12	0.887	Highly reliable

ANALYSIS AND RESULTS

Background Information of the Respondents

This section provides a brief overview of the respondents' background including their gender, work experience, educational qualification and position or profession. The descriptive statistics show that out of 124 responses received, 110 were male representing 89% and 14 were female representing 11% of the respondents. With regard to working experience of the respondents, the results indicate that out of 124 responses received, an overwhelming majority (87%) have between 1-5 years of experience in the construction industry. 8% have between 6-10 years of experience, 4% have between 10-15 years and 1% have over 15years experience.

In respect of the educational qualification of respondents, it is evident that out of 124 responses received 11% of the respondents are master's degree holders, 56% representing more than half of the respondents are bachelor's degree holders whereas 33% of the respondents are HND holders. There is a clear evident showing that the highest population of respondent are the bachelor degree holders. Concerning the profession of respondents, it is noticeable that 48% of the respondents are quantity surveyors followed by supervisors (47%), directors (3%) and project managers (2%). The results are depicted in Table 2.

Table 2: Background information of the respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	110	89%
Female	14	11%
Total	124	100%
Work experience		
1-5 years	107	87%
6-10 years	10	8%
10-15 years	5	4%
Over-15 years	2	1%
Total	124	100%
Educational qualification		
Master's degree	15	11%
Bachelor's degree	69	56%
Higher National Diploma	40	33%
Total	124	100%
Position of Respondent		
Supervisor	58	47%
Quantity surveyor	60	48%
Project manager	2	2%
Architect/ firm director	4	3%
Total	**124**	**100%**

Barriers to Effective Communication on Construction Site

Table 3 presents the respondents level of agreement regarding the barriers to effective communication on site in terms of responses on a five point Likert scale ranging from 1 to 5. The results from Table 3 presents the mean scores (MSs), standard deviations (SDs) and rankings of the six (6) barriers to effective communication. Out of the total (124) responses received, majority believed that attitudinal barriers (BEC1) is the most important factor that hinders communication with a MS of 4.40, which is ranked as the 1st. This is followed by unclear objectives (BEC2) with a MS of 4.00 and lack of technical advancement (BEC3) with a mean score of 3.28. The least ranked factor is psychological problems (BEC6) with a MS of 2.24 and ranked 6th. In addition to the mean scores, which were assigned to each factor to rank the barriers in a hierarchical order, Kruskal-Wallis H test was employed at the second stage to examine the extent of consensuses amongst the survey participants in respect of their positions. Evidently, the Kruskal-Wallis H test indicated in Table 3 revealed there

was some level of agreement concerning five factors as there were no statistically significant differences in the perceptions of the barriers affecting communication. Nonetheless, the opinions of the respondents differ significantly with respect to "unclear objectives" giving that the level of significance was less than 0.05.

Table 3: Barriers to effective communication on construction site

Code	Barriers	No	Mean	SD	Rank	Kruskal-Wallis H	
						Asymp. Sig.	Level
BEC1	Attitudinal barriers	124	4.40	2.464	1st	0.826	Not sig
BEC2	Unclear objectives	124	4.00	1.887	2nd	0.006	Sig
BEC3	Lack of technical advancement	124	3.28	1.480	3rd	0.398	Not sig
BEC4	Language barriers	124	2.96	1.798	4th	0.999	Not sig
BEC5	Physical barriers	124	2.92	1.160	5th	0.136	Not sig
BEC6	Psychological problems	124	2.24	1.812	6th	0.889	Not sig

Factors that assist in Overcoming the Barriers to Effective Communication

Table 4 depicts the responses received from the respondents regarding the factors that assist in overcoming the barriers to effective communication. The results indicate the descriptive and inferential statistics of the factors in terms of overcoming the barriers to effective communication. Out of the total (124) responses received, it is evident that the overwhelming majority perceived being an active listener (OBEC1) as the most important factor in overcoming the barriers to communication, this factor is ranked 1st with a MS of 4.52. Notably, establishing clear lines of communication (OBEC2) is ranked 2nd with a MS of 3.44 and choose an appropriate method of communication (OBEC3) is ranked 3rd with a MS of 3.24. A further interrogation of the table revealed that give constructive feedback (OBEC6) is the least ranked factor with a mean score of 2.64.

The Kruskal-Wallis H test was computed at the second stage to examine the extent of consensuses amongst the survey participants in respect of their profession and how the barrier can be overcome. Evidently, the Kruskal-Wallis H test indicated in Table 4 revealed there was some level of agreement concerning five factors as there were no statistically significant differences in the perceptions of the respondents. On the other hand, the opinions of the respondents differ significantly with respect to "choose an appropriate method of communication" giving that the level of significance was less than 0.05. This implies that each organisation is different and unique in its own way and the method of communication may differ from one firm to the other. In addition, the nature and size of the project may influence the appropriate method of communication to employed on site. This implies that adopting efficient communication channels may contribute to fast-tracking and simplifying the exchange of information (Bendell, 2015).

Table 4: Factors that assist in overcoming the barriers to effective communication

Code	Overcoming the barriers to effective communication	Total	Mean	SD	Rank	Kruskal-Wallis H	
						Asymp. Sig.	Level
OBEC1	Be an active listener	124	4.52	2.209	1st	0.298	Not sig
OBEC2	Establish clear lines of communication	124	3.44	2.210	2nd	0.953	Not sig
OBEC3	Choose an appropriate method of communication	124	3.24	2.604	3rd	0.025	Sig
OBEC4	Avoid information overload	124	3.08	1.859	4th	0.159	Not sig
OBEC5	Be clear and concise	124	3.00	0.6923	5th	0.377	Not sig
OBEC6	Give constructive feedback	124	2.64	1.521	6th	0.348	Not sig

Factors that assist in Enhancing Effective Communication on Site

The results from Table 5 represents the descriptive statistics of the factors that assist in enhancing effective communication on site. Out of the total 124 responses received, majority believed that increasing the morale and strength of employees (EEC1) is the most important factor in enhancing effective communication on site (MS = 4.04). This is followed by paying attention to nonverbal signs (EEC2) with a MS of 3.96 and asking for feedback (AEC3) with a MS of 3.92. Notably, making good decisions (EEC12) was the least ranked factor with a MS of 2.12

Table 5: Factors that assist in enhancing effective communication on site

Code	Effective Communication	No	Mean	SD	Rank
EEC1	Increasing the morale and strength of employees	124	4.04	1.704	1st
EEC2	Pay attention to nonverbal signs	124	3.96	1.994	2nd
EEC3	Ask for feedback	124	3.92	1.874	3rd
EEC4	Worker's co-ordination	124	3.84	1.583	4th
EEC5	Frequency of communication	124	3.84	1.819	5th
EEC6	Practice active listening	124	3.72	1.627	6th
EEC7	Prevention of communication barriers	124	3.68	2.027	7th
EEC8	Control your emotions	124	3.52	1.113	8th
EEC9	Accurately conveyed information	124	3.44	1.899	9th
EEC10	Achievement of target	124	2.72	1.442	10th
EEC11	Elimination of rumors	124	2.32	2.036	11th
EEC12	Making good decisions	124	2.12	1.618	12th

Taxonomy of the Key Components Enhancing Effective Communication on Construction Site

Following the descriptive statistics, an exploratory factor analysis (EFA) was employed to interrogate the factors for enhancing effective communication on construction site. Prior to performing the component analysis, as suggested by Pallant (2020) and Tabachnick & Fidell (2012), it is important to examine the factorability of the variables using the KMO and Bartlett's Test of Sphericity. It is noticeable from Table 6 that the KMO score for this study is 0.879, which surpasses the acceptable threshold of 0.6 postulated by Pallant (2020) and Tabachnick & Fidell (2012). The Bartlett's Test of Sphericity analysis reveals a statistical result (Chi-square = 678.487) and a significant value (P = 0.000, df = 66). This implies that the study met the requirement in order to proceed with EFA. Applying the varimax rotation method (an orthogonal rotation method), the PCA was computed on the 12 key factors from the 124 samples of responses as presented in Table 7. Subsequent to the varimax rotation, PCA discovered three underlying factors with eigenvalues greater than one, accounting for 69.229% of the total variance (Table 7).

Table 6: KMO and Bartlett's Test Regarding Effective Communication in Construction

Test		Value
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.879
Bartlett's Test of Sphericity	Approx. Chi-Square	678.487
	df	66
	Sig.	0.000

Table 7: Combined Total Variance Explained and Rotation Factor Matrix Table for Effective Communication in Construction

Code	Factors	Factor loading	EV	TVE (%)	Cumulative variance (%)
Factor 1	Effective abstract communication and feedback		5.886	49.048	49.048
	Pay attention to nonverbal signs	0.830			
	Control your emotions	0.822			
	Ask for feedback	0.764			
	Practice active listening	0.661			
Factor 2	Stakeholders integration and unambiguous communication		1.410	11.751	60.800
	Workers co-ordination	0.807			
	Eliminating rumours	0.786			
	Raising the morale and strength of the employees	0.661			
	Prevention of communication barriers	0.652			
	Frequency of communication	0.531			
	Making good decisions	0.522			
Factor 3	Accuracy of information		1.011	8.429	69.229
	Accurately conveyed information	0.890			
	Setting of target	0.726			

DISCUSSION OF FINDINGS

Having assessed the barriers of effective communication, identified the factors in overcoming the barriers to effective communication, significance of enhancing effective communication on the construction site; the following findings are expected to assist to adopt strategies to enhance effective communication on the construction site. The study showed that the most important barriers which affect effective communication was indicated as attitudinal barriers with a mean score of 4.40 and was ranked 1st. The implication is that majority of the respondents believed that attitudinal barriers are the most crucial barriers which hinders effective communication on the construction site. The study further indicated that the major factor in overcoming the barriers to effective communication was indicated as being an active listener with a mean score of 4.52 and was ranked 1st. The implication is that majority of respondents believed that the most effective way of overcoming the barriers which affect communication is by being an active listener. The study also showed the most effective communication on the construction site was indicated as rising the morale and strength of employees with a mean score of 4.04, which was ranked as the 1st. This indicates that majority of respondents believed that effective communication leads to rising the morale and strength of employees.

A suitable classification of the factors enhancing effective communication on construction site was developed and the discussion regarding the three components are presented below.

Component 1 – Effective Abstract Communication and Feedback

Effective abstract communication and feedback constitute four key factors and capable of explaining 49.048% of the total variance in the components enhancing effective communication in construction. The four key variables are presented in a hierarchical order with the conforming

factor loading for each factor enclosed in parenthesis:

- Pay attention to nonverbal signs (0.830)
- Control your emotions (0.822)
- Ask for feedback (0.764)
- Practice active listening (0.661)

The adoption of different mode of communication is important on construction site or during construction in order to communicate the right information to the various role players to achieve the project success. These findings are in consonant with Goh et al (2014) who found that integrating different mode of communication (e.g. through BIM) is important in facilitating easy communication on construction site to achieve project success. In addition, controlling one's emotions is one of the most important strategies for enhancing effective communication in construction. Reid (2018) contends that one's emotion during communication may affect the way in which the brain processes information. For instance, if the communicator is not in a good mood, then the receiver might assume that the message being conveyed is not good. Therefore, the sender should not reveal his emotions in the process of communicating as the receiver might misinterpret the information being conveyed.

Component 2 – Stakeholders Integration and Unambiguous Communication

Stakeholders integration and unambiguous communication consist of six key factors and explain 11.751% of the total variance in the components enhancing effective communication in construction. The six key variables are presented in a hierarchical order with the conforming factor loadings enclosed in parenthesis:

- Workers co-ordination (0.807)
- Eliminating rumours (0.786)
- Increasing the morale and strength of the employees (0.661)
- Prevention of communication barriers (0.652)
- Frequency of communication (0.531)
- Making good decisions (0.522)

Effective coordination of workers on site can be achieved through effective communication. Goh et al. (2014) stipulated that effective communication necessitates the use of a cutting-edge multidisciplinary collaboration model that can guide stakeholders in understanding the value of communication during collaboration and the benefits that accrue to both parties as well as opportunities that boost competitiveness in the global market. The study also highlighted that eliminating rumours during communication is crucial in enhancing effective communication in construction. This finding is corroborated by Oke (2022), who made the claim that effective communication involves the transfer of well-defined information free of rumours from the sender to the receiver, whether through direct physical contact or over a distance facilitated by a specially designed medium.

Another important factor for enhancing effective communication in construction is increasing the morale and strength of the employees. Increasing the morale and strength of the employees enhances their confidence level and subsequently encourages effective communication among peers and most importantly between subordinates and superiors. Hackman (2011) supported this notion by stating that effective communication helps develop morale and strengthens teams. Because effective teamwork aid in developing the habit of forecasting possible challenges in the communication line and developing strategies by closely interacting with each

other. The finding is also congruent to that of Half (2010) who stated that effective management is essential in communication for guiding teams and lifting their confidence during times of disruption and uncertainty. According to the study, prevention of communication barriers is critical in terms of enhancing effective communication in construction. Goh et al. (2014) and Lavil (2005) opined that elimination of communication barriers will contribute to increasing the productivity and efficiency of construction activities, thereby improving project teamwork among industry stakeholders.

The study also highlighted that frequency of communication is also vital in enhancing effective communication in construction. Lorand (2010) proposed that frequency of communication helps minimise the problem of ambiguity in communication, additionally, frequent communication helps the receiver of message to adequately comprehend and understand what is required. The findings also emphasised that making good decisions is imperative in enhancing effective communication in construction. Because inconsistencies in decision making implies that there should be up to date information regarding a particular decision that has been taken and failure to inform the parties involve may have a consequential effect on project performance. This is corroborated by Colman (2015) who opined that not only does information overload due to inconsistencies in decision making slow down employees' productivity, it also affects their ability to make appropriate decisions.

Component 3 – Accuracy of Information

Accuracy of information consist of two factors and explain 8.429% of the total variance in the components enhancing effective communication in construction. The two key variables are presented in a hierarchical order with the matching factor loadings enclosed in parenthesis: Accurately conveyed information (0.890) and Setting of target (0.726). One of the most important modalities for enhancing effective communication in construction is the extent of accuracy in conveying information to stakeholders on site. According to Lorand (2010), when communicating in construction, it is far essential to ensure the information is accurate and that it can be understood prior to sending it to the intended recipients. The outcome is similar to Ashdown (2009) findings, who postulated that it a good practice to ensure that all written communications are proofread before sending it to see whether they can be shortened and still communicating vital information effectively. The research also divulged that setting of target is critical in enhancing effective communication in construction. This finding aligns with Half's (2010) study who dictum that communication improves management of the team and that effective managers can clearly express the vision and intent of the project by setting targets regarding how to complete each aspect of the project.

CONCLUSION AND RECOMMENDATION

This paper investigated the underlying factors that contribute to communication inefficiencies among SME construction firms in Ghana and to develop modalities for improving effective communication between industry stakeholders in the construction industry. To achieve the purpose, germane literature related to communication in construction were reviewed and subsequently supported by a questionnaire survey. The salient findings indicate that the topmost barriers influencing effective communication on construction site were: attitudinal barriers, unclear objectives and lack of technical advancement. Furthermore, the most significant modalities to be adopted in overcoming the barriers to

effective communication on construction site were: being an active listener, establishing clear lines of communication and choosing an appropriate method of communication.

The grouping of the key factors for enhancing effective communication on construction site was achieved by conducting EFA, which aided in terms of reducing the 12 factors into smaller groups. Based on EFA, the factors were categorised into three groups namely: effective abstract communication and feedback; stakeholders' integration and unambiguous communication, and accuracy of information. This implies that the results will be useful in amplifying the communication practices of SME construction firms and other stakeholders in the construction industry to improve project delivery. Hence, prioritising the various communication modalities may serve as a framework for developing tailored communication systems, tools, and protocols for evaluating the efficacy of communication by SME construction firms in project delivery on a regular basis. This may subsequently improve project performance with respect to cost, time quality, and health and safety.

In effect, communication strongly influences the performance of the workers within the construction firm. Consequently, maintaining clear lines of communication, avoiding information overload, accurately conveyed information, being clear and concise and giving constructive feedback should always be prioritised by the team leader (Top management teams) before the commencement of every project. This study also suggests that in order for SMEs to be competitive and survive in the construction industry, they should adopt effective communication modalities that include: effective abstract communication and feedback; stakeholder integration and unambiguous communication; and information accuracy to overcome communication barriers during construction project delivery. The research focused on construction firms classified as SMEs (D4K4, D3K3, and D2K2) in Ghana. Consequently, the significance of this study should be expanded to sub-Saharan Africa and then benchmarked against other developing countries to establish if similar findings would emerge.

DECLARATION OF COMPETING INTEREST

The authors declare that they do not have any competing financial interests or personal relationships that could appear to have influenced the work reported in this paper.

DISCLOSURE STATEMENT

The authors declare no conflict of interest.

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