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# The Use of Social Media Tools for Effective Communication in Construction Project Delivery in Maiduguri Metropolis, Borno State

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## ABSTRACT

Social media is a vital tool that aids in communication amongst construction project stakeholders. The main issue that propelled this study was scarcity of information on the extent of deploying the use of social media tools for effective and efficient construction project delivery in Maiduguri metropolis. Against this backdrop, this study aimed to examine the use of social media for effective communication in construction project delivery in the Maiduguri metropolis. Survey design was used for the conduct of the study. Due to restrictions and constraint, a purposive sampling of 105 questionnaires was administered to representatives of clients, contractors, and consultants using multiple snowballed sampling techniques. The questionnaire administration attained a 73.75% response rate. Data were analyzed with a statistical package for social science (SPSS version 24.0) tool for frequencies, percentages, and regression. 14 social media tools were investigated based on the strengths and limitations of each platform within the context of construction project communication. The findings indicate that, the most used social media tools for communication during construction project delivery in the study area are: The most frequently used social media tool was WhatsApp with 39%, followed by rarely used tool; Snap chart (40.7%), Twitter (52.5%), Facebook (35.6%), Telegram (39%), Youtube (25.4%) and Facebook messenger having 18.6% respectively. The findings equally revealed that, the deployment of social media will have a very high impact of 54.2%, 42.4% and 44.1% on timely completion, budgeted cost, and completion of project within the anticipated quality expectations in the study area. Furthermore, the results show significant positive cause-effects of social media communication on construction project delivery time, cost and quality in the study area. This suggested that, social media tools should be adopted by stakeholders to achieve effective and efficient communication in order to enhance successful construction project delivery. More research should be carried out to come up with new communication technologies that are user friendly.

**Keywords:** Social media, communication, Building construction, project delivery, stakeholders

## INTRODUCTION

In Nigeria, the construction industry is playing a vital role in its economic development and forming one of the bases upon which the populace assessed the performance of their various government in general (Shehu & Shehu, 2022). Effective communication is vital in ensuring that, construction project deliverables set out are properly achieved. However, according to scholars including (Gamil & Rahman, 2017) poor communication has many effects and consequences in construction industry such as overrun of cost, time, dispute and project failures. Researchers and experts in the construction industry have all agreed that project

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quality, budgeted cost estimate, as well as the completion deadline are the basic performance measures that are most frequently sort. (Shehu & Shehu, 2023a).

Quality, though mostly ignored during the project initiation period, are however the best standard measure to be deployed when evaluating the success of construction project over the course of its life-cycle, particularly after the project completion (Shehu & Shehu, 2023a). A recurring challenge encountered by numerous stakeholders globally in the building construction sector is delay in project delivery (Shehu, 2021a). According to estimates from the World Bank, Nigeria's North-Eastern region states including Borno State have suffered damages and destruction to their infrastructures, costing about USD 9.2 billion, while the region's public infrastructure recovery and reconstruction will likely cost USD 6 billion (Shehu & Shehu, 2023b). Also, more recently 62.7% of building construction projects were reported to have encountered cost overrun in a range of 5-25% of total project cost during construction project delivery in the North-eastern region of Nigeria (Shehu, 2024).

According to Nomo, (2021 ; Shehu &Shehu, 2022), the management of construction is so unique that it involves so many processes and the contribution of so many stakeholders and professionals such as Architect, Engineers, Builders, Quantity Surveyors, Project Managers, Town Planners, Land and Estate Surveyors, among others. The professionals normally are representative of either the client, contractors, and or consultants all playing a crucial role from the project initiation, planning, execution, monitoring, controlling, and the closing stage of the work to achieve specific goals (Shehu, 2021b).

The deployment of social media for effective communication in the construction industry is still an emerging trend despite the few published studies conducted (Bilal *et al*., 2016; Dwivedi *et al*., 2021). For instance, in Africa, Amade, (2017) in his studies in Imo state, South-Eastern Nigeria investigated the impact of Nine (9) social media tools in achieving effective communication in construction project delivery. Even though he claims in his findings that the use of Facebook, blogs and RSS feeds, WhatsApp, Tweeter and YouTube have positive effect on construction project delivery. However, Amade's findings did not revealed covered effects or impacts of deploying social media tools on project cost, quality and time. Shehu *et al*., (2020) in their studies, states that, construction deliverables are the ultimate aim of any project and they formed the benchmark upon which the success or failure upon which project are appraised by stakeholders in the construction sector. In addition, for decades, Borno state, the study area has been experiencing precarious issues, including insecurity due to activities of various non-state organizations and climate change, its built environment is characterized with mass military movement and operations, restriction of movement, inflation of prices of basic necessities and construction materials, constraints among other uncertainties. As such, due to the aforementioned issues outlined, there is need to devised and deploy all necessary measures towards ensuring effective construction project delivery in the study area characterized by restriction of movement among other constraints.

Therefore, it is hoped that, this study will contribute valuable knowledge to the field of social media communication in general. It is so far one of the few studies that have focused more on the use of social media for effective communication in the built environment characterized by uncertainties due to insecurity and climate change.

This study is aimed at examining the use of social media tools for effective communication in construction project delivery in Maiduguri Metropolis, Borno state with a view to encourage its deployment towards improving successful completion of building construction projects. To achieve this aim, the study outlined the following objectives:

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i. To investigate the level of deploying social media for communication in construction project delivery in Maiduguri Metropolis.

ii. To investigate the impact of social media communication on construction project delivery time, cost and quality in Maiduguri Metropolis.

iii. To determine the effect of the use of social media communication on construction project delivery in Maiduguri Metropolis.

## MATERIALS AND METHODS

In this study, a descriptive survey methodology was employed to produce responses, with a structured questionnaire used as the data collection instrument. This methodology was adapted from previous studies in the region, such as those by (Shehu & Shehu, 2023a). A 5-point Likert scale, ranging from "1" (never used) to "5" (frequently used), was used to rate the level of deploying the use of 14 Social Media tools for effective Communication in Construction Project Delivery, while the likely impact on the Use of Social Media Communication on construction project delivery i.e. Time, Cost and Quality were equally assessed using of 5-point Likert scale of impacts with (1= No Impacts – to- 5= High Impact) respectively.

The study was conducted in Maiduguri Metropolis in Borno state, Nigeria. The state is located in the North-Eastern part of the Country; it has a population of approximately 4.2 million people, while the Maiduguri Metropolis has approximately 1 million people (National Bureau of Statistics, 2006). The Maiduguri Metropolis is unarguably a construction site due to activities of insurgency for decade in most part of the state. It is housing the largest internally displaced people in the Sahel and Lake Chad region of Africa. With the recovery and ongoing reconstruction effort in the state, the area is ideal for this study.

Critical construction professionals, including Architects, Engineers, Quantity surveyors, Builders, Planners, and Estate surveyors and valuers, were grouped into categories of contractors, clients, and consultants. Their views were sought as respondents in this study.

A convenience purposive sample of one hundred and five (105) questionnaires was distributed to the accessible construction professionals in the study area through a multiple snowball sampling technique point, due to restrictions, constraints among other peculiarities of the study area. This sampling method was similar to previous methods used in similar study area, for instance, (Shehu & Shehu, 2023b), Shehu, (2024). A total of 65 questionnaires were successfully retrieved from respondents, with 59 deemed suitable for data analysis. This response rate was lower than previous similar studies, for instance, (Shehu *et al*., 2023). Also, 40 questionnaires were not returned representing 38.10%. The research methodology flow chart adapted for this study is shown in Figure 1.

The Statistical Package for the Social Sciences (SPSS) version 24.0 and Microsoft Excel were used to perform both descriptive and inferential data analysis, which includes tables, frequencies, percentages and regression.

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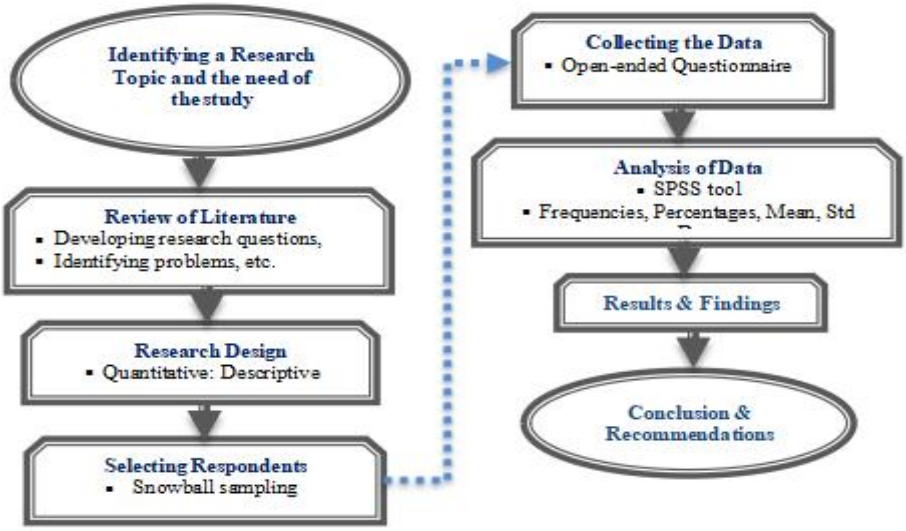


**Figure 1:** Research Methodology Flow Chart
Adapted: Shehu, (2024) Shehu & Shehu, (2023a)

## RESULTS AND DISCUSSION

Characteristics of the respondents as presented in Table 1 shows that nearly all the relevant construction professions participated in the survey, the Engineering and Quantity surveying professionals have the highest participation in the survey with 30.5% each followed by Architects 15.3%, Builders 13.6% and Estate/Urban planners which has the lowest representation of professionals in the building sector, as such, there is a robust recognition of social media's importance in construction project communication. Findings shows that virtually all the respondents possess the necessary academic qualifications, the majority of the respondents possessed a Degree or High National Diploma with the highest 52.4% reflecting a strong representation of individuals with undergraduate-level education, those with Master/PGD are 28% and the least was Diploma/Certificate 13.6% and PhD 6%. As such, more than 90% of the respondent's opinion could be said to be valid and more accurate by virtue of their academic knowledge and qualifications. The study revealed that, respondents with less than 5 years of working experience has the highest with 40.7%, 6-10 years of experience 30.5%, 11-15 years 22%, 16-20 years 5.1% and respondents with working experience above 20 years have 1.7% which is the smallest fraction respectively. As such, the respondents were qualified to take the survey, which increased the reliability of the findings of the study. The study revealed that, 32% were clients. The representation of clients indicates that, they value the efficiency and transparency that social media offers in terms of project updates, milestones, and communication with project teams, including Consultants 37% which is the highest and contractors 31%. Therefore, all the important parties in a typical project are well represented. The unanimous response of 100% across all participants reflects the industry-wide recognition of social media's indispensable role. This statistic indicates that, social media has become an integral and universal tool for communication and information exchange within construction projects in Maiduguri Metropolis.

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**Table 1:** Background of the Respondents

| Categories | Features | Frequency | Percentage |
|---|---|---|---|
| Area of Professionalism | Architecture | 9 | 15.3 |
| | Building | 8 | 13.6 |
| | Engineering | 18 | 30.5 |
| | Estate /Urban Planning | 6 | 10.2 |
| | Quantity Surveying | 18 | 30.5 |
| | Total | 59 | 100.0 |
| Highest Academic | Diploma/Certificate | 8 | 13.6 |
| | Degree/HND | 31 | 52.4 |
| | Master/PGD | 17 | 28 |
| | PhD | 4 | 6. |
| | Total | 59 | 100.0 |
| Years of working | Less than 5 years | 24 | 40.7 |
| | 6-10 years | 18 | 30.5 |
| | 11-15 years | 13 | 22.0 |
| | 16-20 years | 3 | 5.1 |
| | Above 20 years | 1 | 1.7 |
| | Total | 59 | 100.0 |
| Working Organization | Clients | 19 | 32 |
| | Consultants | 22 | 37 |
| | Contractors | 18 | 31 |
| | Total | 59 | 100 |
| Do you Use Social Media as a means of Communication or Getting | Yes | 59 | 100 |
| | **Total** | **59** | **100** |

Table 2 shows the reliability test results of the independent variables: Social Media tools, and dependent variables: Project Deliveries (time, cost and quality) using internal consistency. Findings revealed that, all the Alpha (α) values obtained for this study are greater than the recommended acceptable minimum value of 0.70 which agreed with previous similar studies, for instance, Shehu *et al* ,(2023), Shehu,(2024). Hence, they are all acceptable for this study.

**Table 2:** Reliability Test for the Studies Variables

| Variables | No. of items | Cronbach's alpha (α) | Remark |
|---|---|---|---|
| Social Media tools | 14 | 0.89 | Good |
| Project Deliveries (time, cost and quality) | 3 | 0.81 | Good |

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**What is the Level of Deploying Social Media Tools for Communication in Construction Project Delivery in Maiduguri Metropolis?**

Table 3, is a representation of respondent's ratings on the degree of the usage of social media. The results revealed that, the most used social media tools for communication are: WhatsApp (49.2% Occasionally used, 39% frequently used); Telegram (rarely used 39.0%, Occasionally used 16.9%); Twitter ( rarely used 52.5%, Occasionally used 13.6%); Facebook (rarely used 35.6%, Occasionally used 23.7%); snap Chat (rarely used 40.7%, Occasionally used 11.9%); and YouTube and Skype are both 25.4% rarely used for communication during construction project delivery in the study area respectively. Meanwhile, the least deployed social tools during construction project delivery in the study area are: TikTok (Never used 88.1%); WeChat (Never used 69.5%); Wikis-blog (Never used 64.4%) Instagram and Reddit each (Never used 52.5%); while 55.9% reported rarely deploying the use of LinkedIn for communication during construction project delivery in the study respectively. In general, the popularity in the deployment of social media tools like WhatsApp, Facebook, Twitter, Telegram, snap Chat, Skype and YouTube in the study area is similar with findings from previous studies, for instance, (Amade, 2017; Harris *et al*., 2021).

**Table 3:** Social Media Tools Level of Usage

| s/no | Social media tools | Never Use | Very Rarely Use | Rarely Use | Occasionally Use | Frequently Use |
|---|---|---|---|---|---|---|
| 1 | Facebook | 5 (8.5%) | 18 (30.5 | 21 (35.6%) | 14 (23.7%) | 1 (1.7%) |
| 2 | YouTube | 13 (22.0%) | 28 (47.5%) | 15 (25.4%) | 2 (3.4%) | 1 (1.7%) |
| 3 | Skype | 13 (22.0%) | 27 (45.8%) | 15 (25.4%) | 4 (6.8%) | - |
| 4 | Snap Chat | 12 (20.3%) | 15 (25.4%) | 24 (40.7%) | 7 (11.9%) | 1 (1.7%) |
| 5 | WhatsApp | - | - | 7 (11.9%) | 29 (49.2%) | 23 (39.0%) |
| 6 | Twitter | 1(1.7%) | 19 (32.2%) | 31 (52.5%) | 8 (13.6%) | - |
| 7 | Facebook Messenger | 12 (20.3%) | 31 (52.5%) | 11 (18.6%) | 5 (8.5%) | - |
| 8 | Reddit | 31 (52.5%) | 26 (44.1%) | 2 (3.4%) | - | - |
| 9 | WeChat | 41 (69.5%) | 17 (28.8%) | 1 (1.7%) | - | - |
| 10 | Tik-Tok | 52 (88.1%) | 7 (11.9%) | - | - | - |
| 11 | LinkedIn | 20 (33.9%) | 33 (55.9%) | 5 (8.5%) | 1 (1.7%) | - |
| 12 | Telegram | 5 (8.5%) | 21 (35.6%) | 23 (39.0%) | 10 (16.9%) | - |
| 13 | Instagram | 31 (52.5%) | 27 (45.8%) | 1 (1.7%) | - | - |
| 14 | Wikis-blog | 38 (64.4%) | 20 (33.9%) | 1 (1.7%) | - | - |

**What is the Impact of Social Media Communication on Construction Project Delivery Time, Cost and Quality in Maiduguri Metropolis?**

Table 4 presents the results on the impacts of social media communication on construction project delivery. Findings revealed that, 54.2% of the respondents indicated 'very high' level of impact on timely delivery of construction projects; 44.1% of the respondents reported a 'very high impacts' on projects quality delivery; while 42.2% reported a 'high' impacts the project delivery within the budgeted cost. These findings agreed with previous studies, for instance, Tipili *et al*., (2014) studies, established that within the Nigeria construction industry; there is a strong appreciation of the importance of project communication and its effects within the industry.

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**Table 4:** The levels of Impact of Social Media Communication on Construction Project Delivery

| Impacts of Social Media | No impact | Very Low | Low | High | Very High |
|---|---|---|---|---|---|
| Project Time | 2 (3.4%) | 3 (5.1) | 10 (16.9%) | 12 (20.3%) | 32 (54.2%) |
| Project Cost | 3 (5.1%) | 8 (13.6%) | 6 (10.2%) | 17 (42.2%) | 25 (28.8%) |
| Project Quality | 4 (6.8%) | 5 (8.6%) | 4 (6.8%) | 20 (33.9%) | 26 (44.1%) |

**What is the Effect of the Use of Social Media for Communication on Construction Project Delivery in Maiduguri Metropolis?**

**Table 5:** Regression Model Summary Depicting the effect of social media Construction Project time, cost and quality

| Models | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| Project timely delivery | .517a | .267 | .034 | .41093 | .267 | 1.144 | 14 | 44 | 0.001 |
| Project cost | .567a | .322 | .106 | 1.23479 | .322 | 1.489 | 14 | 44 | 0.00 |
| Project quality | .618a | .381 | .184 | .59108 | .381 | 1.937 | 14 | 44 | 0.00 |

Predictors: (Constant), Wikis_blog, YouTube, WhatsApp, Twitter, LinkedIn, Skype, Instagram, Reddit, TikTok, Facebook, Facebook Messenger, Wechat, Telegram, Snap Chat

Table 5 present the regression model summary of the independent variable i.e. 14 social media tools. It shows the multiple correlations R-Values in a range of 0.517- 0.618 which are very fair for this type of study and R-Square values in a range of 0.267-0.381 which explains 26.7%, 32.2% and 38.1% of the variance for time, cost and quality respectively. As such, there was evidence that the data used in analyzing the relationship between the independent variables and the dependent variables were closely related.

This study determined the effect of the use of Social Media for effective communication on construction project delivery. The following hypotheses were proposed:

*H1* There is a significant relationship between Social media for communication and construction project delivery- time.

*H2* There is a significant relationship between the use of social media tools and construction project delivery- cost.

*H3* There is a significant relationship between the use of social media and construction project delivery- Quality.

**Table 6:** Hypothesis Results Showing Significant Effects of Social Media on Construction Project Delivery.

| Hypothesis | Regression weight | Beta coefficient | T | p-value | Hypothesis supported |
|---|---|---|---|---|---|
| HI | SM→CPT | 0.517 | 1.57 | 0.01 | Yes |
| H2 | SM→CPC | 0.567 | 10.59 | 0.00 | Yes |
| H3 | SM→CPQ | 0.618 | 4.35 | 0.00 | Yes |

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Table 6, the results of the regression analysis showed that, Social media has a positive effect on construction project delivery and is significant at $p< 0.05$. Moreover, Beta value of 0.517 depicts that a unit increase in the use of social media will improve construction project delivery time by 51.7%; In the case of cost, the Beta value of 0.567 indicates that the use of social media will has about 56.7% chance of increasing completing project within the budgeted cost. while for quality, the results showed that, the use of social media will result in 61.8% cause-effect increase on quality delivery of construction projects. In general, these results show significant positive cause-effects of Social media communication on construction project delivery time, cost and quality in the study area.

## CONCLUSION

This study examined the use of social media tools for effective communication in construction project delivery in Maiduguri Metropolis, Borno state, Nigeria. Basically, 14 social media tools were investigated and level of their usage was analyzed in which WhatsApp, Telegram, Twitter, Facebook, snap Chat, YouTube and Skype are the most used for communication during construction project delivery in the study area respectively. Social media communication has impact on project completion time, cost and quality by 54.2%, 42.2% and 44.1% respectively. Social media communication has significant effects on construction project delivery with 51.7% positive cause-effect on project completion time, 56.7% positive cause-effect on cost and 61.8% positive cause-effect on quality completion of construction project respectively. Thus, it is recommended that; the deployment of social media should be done by choosing the most efficient tool for communication among project stakeholders. Future research in the region might focus on drivers and barriers to the use of social media in construction project delivery, as well as social media effective usage in construction project delivery in the region.

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