AN EXAMINATION OF THE ROLE OF CHATGPT IN CONSTRUCTION MANAGEMENT PRACTICE IN NIGERIA.

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ABSTRACT

The need for efficiency in construction practices like in other industries has warranted the desire for a technology that improves and streamlines communication and collaboration. One such is the chat generative pre-trained transformer(Chatgpt), which produces human-like responses in automating scheduled tasks and optimization of resources. This paper therefore examines the role of ChatGPT in construction management practices in Nigeria, with a review to encourage its adoption for improved project delivery. To achieve this aim, the study examines the impact/role of chatgpt in construction management practices in Nigeria, investigates the challenges confronting its adoption of chatgpt in construction management practices in Nigeria and suggests measures for managing the challenges confronting the adoption of chatgpt in construction management practices in Nigeria. The study adopted descriptive survey design using a structured questionnaire administered to both construction professionals, computer professionals and other stakeholders. The findings reveal that Chatgpt can be used to produce a safety manual for construction operatives, adopt pre-project designs and for planning operations. The most critical roles of Chatgpt are for improved decision-making (22), safety/quality management (21), administrative automation (18) and team collaboration (17). The factors confronting its adoption include :data security (18), sustainability / unforeseen issues (16), inability to manage queries (15), bias/error-prone (12). The study recommends that there should be a clear synergy between construction professionals and ChatGPT developers behind the scenes (19), tailored usage of the app for specific projects and ensuring data privacy.

KEYWORDS: Construction management, Chat-gpt, efficiency, project success, productivity and artificial intelligence.

1.0 INTRODUCTION

According to Castillo (2023), the desire for efficiency in Construction Management practices in a fast pacing nation such as Nigeria necessitates the adoption of Chatgpt. The App, which others have seen as a disruption to human input in the industry, has, however, come to bridge the gap in the administration process by streamlining effective communications and collaboration. A study of such roles will not only create an effective and efficient process that generates profit for the construction companies while helping construction stakeholders stay updated. The adoption of Chatgpt will revolutionalize project management practices that have a competitive edge and increase client satisfaction. Jelodar (2025), identified Construction 4.0 as a radical shift that integrates Internet of things (IoT), Building information Modeling (BIM), robotics, automation, artificial intelligence and digital twin technologies. Generative AI therefore provides a learning platform for construction training, professional practice and operations. According to LetsBuild(2025), Chat-gpt is an Ai platform created by open Ai that assists users with tasks in real-time output. The GPT stands for Generative Pre-trained Transformer that produces human-like responses in automating scheduled tasks, optimization of resource allocation, and enhancement of overall project quality(ProCrew Software, 2023). While a lot of construction stakeholders wonder what chatgpt fully entails, a couple are also afraid of the disruptive impact of chatgpt. The aim of the research is to examine the role of chatgpt in construction management practices in Nigeria with a view to recommending measures to manage the barrier to its adoption. The study adopted research objectives such as: To describe the impact of chatgpt on construction management practices in Nigeria, examine the role of chatgpt in construction management practices, assess the challenges confronting the adoption of chatgpt in construction management practices in the study area, and to recommend measures for barriers to adoption in construction management practices.

2.0 Literature Review

The role of chatGPT in project-based data analysis and trend predictions is important because it can look into existing data and spot problems while recommending possible solutions. It has the ability to generate reports which professionals can act on when problems arise. Record keeping on construction sites is necessary because thorough documentation enhances communication and making informed decisions. According to Roope and Olli (2024), the

emergence of artificial intelligence has affected a lot of industries, including the construction industry. The industry, with attendant issues of volatility, unpredictability and attendant risks which have hampered projects' success, warrants an intervention. The traditional construction project risk management (CPRM) has created a void that only Artificial intelligence (AI). According to Chui, etal., (2023), AI offers a revolutionary edge over the traditional approach in project management efforts.

2.1 Impact of chatgpt in Construction Management practices in Nigeria

Chatgpt, according to Ezelogs (2025), has game-changing uses such as enhancing communication, improving decision-making, increased efficiency, reduced error and enhancing safety. The study encouraged that it should be embraced for its present and future uses. According to Castillo (2023), the adoption of chatgpt in construction management practices is varied and with specific and generic applications such as

(a)Safety Manual for construction operatives:since every construction activity has rules of engagement, standard procedure and realistic process, chatgpt is a very great tool to generate realistic possibilities, scenarios and what to do in such scenarios. The app can generate modules and teaching skills that can be engaged with pre-scenario, during and after the scenario.

(b) Monitoring Project operations:All projects involve inventory control, resource allocation, timeline control and project control issues. Chatgpt comes in handy in progress monitoring and real-time updates.

(c)Client Management: Chatgpt offers real-time client complaints, inquires and supports management opportunities when integrated into a company website and social media channels.

(d) Pre-project design and planning operations:Every construction project often starts with client sketches and plans that guide users' preferences and needs in line with standard practices. The advent of chatGPT has made it possible to have generative animation and 3D images that are more realistic than the traditional approach using computers..

2.2 Role of chatgpt in Construction Management practices in Nigeria

The AIContentfy team (2023) identified that integrating chatgpt reduces human error and improves efficiency. Since it has the ability to automate repetitive processes, the tendency for error is minimized. The adoption of chatGPT offers lots of benefits and fills gaps that were

common with the traditional and computer-based approach to Project Management in Nigeria. Some of the roles and benefits of incorporating chatGPT include:

i. Administrative Automation: The use of technology in repetitive and recurring tasks and activities such as billing, daily record keeping, client appointments, order/invoice generation and project scheduling helps to reduce mistakes with human input, save time, lower cost and allow human forces to focus on the more technical aspects. Let'sBuild(2023) recognizes further project planning and scheduling duties such as creating task lists, assigning responsibilities and setting deadlines.

Ii. Team collaboration: According to LetsBuild (2023), Chatgpt helps to ensure seamless communication, which is essential in team collaboration. With real-time access to project-based information such as project timelines, design plans and progress reports, the project team can easily access work data and respond as of when needed by ensuring effective communication. Large data can also be easily manipulated for better projects decision-making. Insights and input from ChatGPT helps in resource allocation and real-time responses to client inquiries. Features like Virtual assistant have become more effective than human call centers. The app helps with issue resolutions, project coordination and status updates.

iii. Predictive and improved decision-making. Chatgpt has the ability to predict cost forecasts, with project historical and present inputs such as present cost, material requirements, project scope, labour rates : chatgpt can generate cost estimates for present or future uses. As a machine, it can consider inflations, market conditions and other factors where humans are limited. Document sharing and approvals are now streamlined.

iv. Safety and quality management: The advent of chatgpt according to LetsBuild(2023) enables hazard identification, safety inspections and quality updates. Access to safety updates and checklists becomes a basis for risk assessment, work schedule analysis and ultimate quality control.

2.3 Challenges confronting the adoption of chatgpt in Construction Management practices in Nigeria

Despite the identified role of chatgpt, it also had, like every other technology, limitations which could easily hamper its integration. Such challenges include

1. Bias and Errors: Like every progressive development, chatgpt is still an ongoing development working on limited historical data and cache. Therefore, wrongly phrase inputs

and programming affects its output. It hasn't been developed to spot limitations, slip and incomplete reports.

2. Understanding Language : being able to understand and integrate chatGPT specific terminologies and construction industry technical terms is often an issue, because the same word may have a different meaning depending on the context it was used.

3. **Lack of Domain-Specific Knowledge:**The intricacies of construction project terms such as the building codes, safety regulations, and other specific construction-based methodologies become a gap

3. Handling Complex Decision-Making: ChatGPT may struggle with complex decision-making such as determining the optimal sequencing of construction activities or evaluating the financial viability of different project options that may require more than just text-based responses.

2.4 Managing the challenge that confront adoption of chatgpt in Construction Management practices .

1.Involving human : Since chatgpt depends on the human input for information , intuition and understanding , there is a need for human synergy recognizing that chatgpt is meant to assist and enhance human effort rather t¹han replace it.

2.Data Privacy issues: Maintaining data security has been a recurring complaint about chatgpt and managing this starts with not sharing private or sensitive information

3.Tailored usage: It's important to use the tool with other project management tools and it's usage should be with concise instructions and progress monitoring inputs. chatgpt Should remain a tool and not the end.

4.Clear synergy:While chatgpt has it's functionality, it's important to clarify who manages what, be patient with the limit of operations, Carry out constant monitoring as well as improve the present operation. the Advent of generative AI will expand the functionality of chatgpt
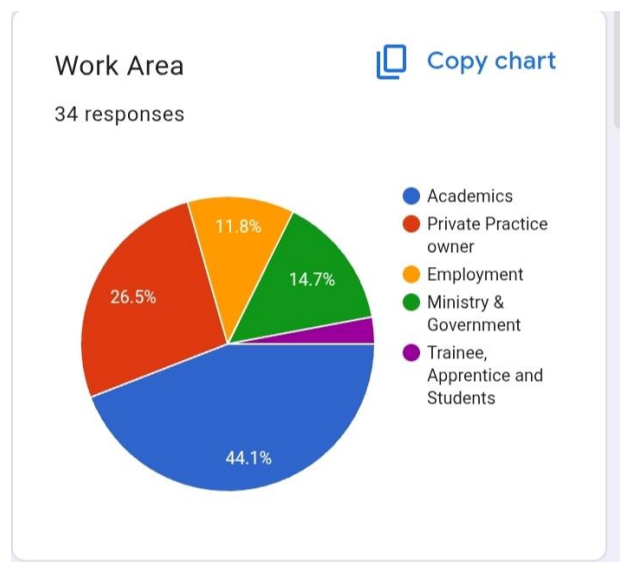
3.0 METHODOLOGY

Considering the research questionnaires of this study, qualitative data will be required through adopting a descriptive survey design approach. This approach will help in gathering critical data that affords an opportunity to create essential outcomes based on empirical research and to differentiate theory, assumptions, and facts from information gathered from the professionals. The technicalities of this paper adopts a deductive approach by looking at

theory, produces hypothesis from that theory, relates to the focus of the research, and tests that theory. This research is a logic positivist focus is to promote the idea of the experimentation strategy, testing theory to increase the predictability and outcomes. The population of this study was 60 construction operatives, project/human resource managers/coordinators/ engineers, and top managers/company owners from registered Construction Companies in Nigeria.

4.0 ANALYSIS AND RESULTS

A total of 34 questionnaires were retrieved, each question was structured to address the questionnaire. The questions were categorized into three parts from demographic, objectives based questions and opinions based questions.

The majority of the respondents(44.2%) were from academia, while the next few respondents were from private practice (26.5%). The other respondents were from the ministry/government parastatal (14.7%), paid employment (11.8%)and trainees/apprentices and students(2.9%) also had their opinion on the use of Chatgpt in efficient management of construction practice in Nigeria. The prevalence of those in academia is highly supported because such innovation originates from the research/academic institution before it's introduced to those in the field. Most of the respondents(73.5%). However, only few have 1– 5 years' awareness of such innovation. ChatGPT is a recent introduction and therefore, is still at an infant stage of application in the construction industry. This study therefore comes timely to enlighten on its role. 14.5% have had over 10 years' awareness, mostly because of their research-oriented affiliations, while 8.8% have less than 1 year and 2.9% only had 5-10

years experience or exposure. 79.4 % of respondents doesn't see Chatgpt as a disruptive force but as a support tool unlike 14.7% who thought it was. 2.9% however still see it as too complex and a disruptive project management tool(2.9%). The majority of the professionals and respondents see ChatGPT becoming a new normal in construction management practices in Nigeria (79.4%), while 20.6% think otherwise. On the impact of chatgpt on construction management practices, 16 respondents believe that it can be used to produce a safety manual for construction operatives and be adopted for pre-project designs and used for planning operations, while 13 believe it can help in project monitoring operations (13) and client management (12). The most important roles of chatgpt identified are predictive and improved decision-making(22), safety and quality management (21), administrative automation(18) and team. Collaboration (17). However, the challenges confronting the adoption of chatGPT include :data security (18), sustainability / unforeseen issues (16), inability to manage queries (15), bias/error-prone (12). The measures suggested therefore are: clear synergy between professionals and chatgpt behind the scenes (19), involving humans all the way/tailored usage for specific projects (18), and data privacy management provisions (17).

Generally, the respondents are of the opinion that chatGPT has a good role though unpredictable in outcome. The respondents believe that the use of chatGPT in construction management practices includes increased productivity/ proficiency, project planning and scheduling,

1. Project Planning, Scheduling and Monitoring

2. Cost Estimation and Budgeting

3. Risk Identification and Management

4. Design Assistance, Optimization and Compliance

5. Documentation, Communication and Collaboration

6. Sustainability and Efficiency

7. Fast track construction processes

8. Helps in administrative and supportive roles and also in research in academics

With proper training, ChatGPT or Ai tools become a support tool harnessed into the construction industry as predictive models for safety, project delivery and building maintenances. ChatGPT, properly managed, becomes a tool for better supporting construction management. Practice when that saves time, reduces mistakes, gives quick ideas, when used and managed appropriately.

5.0 CONCLUSION

While a few respondents see the app as something that can reduces individual's creativity if not managed properly by human as just a supportive role.

Chat gpt a branch of Artificial intelligence cuts across every field of academia. It's adoption is an evolving necessity to aid optimal utility for efficiency in data analysis/management and enhanced effectiveness of human involvements in every field specifically the construction management practices in Nigeria.

(II)Disclosure of Conflict of Interest

 Authors declare that there is no conflict of interest regarding the publication of this manuscript.

 (iii) Statement of Ethical Approval

All relevant ethical approval for this study has been obtained and maintained.

(iv) Statement of informed Consent

All necessary informed consent were obtained.

(Vi)Data Availability Statement

The original contributions presented in the study are included in the article, further inquiries can be directed to the corresponding author/s.

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