**KEY FACTORS INFLUENCING PRODUCTIVITY IN THE CONSTRUCTION SECTOR: A CASE STUDY OF AWKA, ANAMBRA STATE, NIGERIA**

**ABSTRACT:**

One of the key factors influencing productivity in construction projects is labour efficiency. The construction industry faces various challenges which affects productivity, this includes shortage of workers with specialised skills and disruption in supply chain. This study examines the key factors influencing construction productivity in Awka, highlighting challenges such as skill shortages, inefficient management practices, and barriers to technological. The study utilized descriptive research design. The research was carried out in Anambra State, located in south-eastern Nigeria, between October 2023 and November 2024. Data was collected through questionnaires distributed to industry professionals and the population of this study were 194 registered professionals in their various professional bodies in Anambra State, thus 63 builders, 21 architects, 67 civil engineers and 43 surveyors. The researcher employed simple random sampling technique for this study. The sample size of 131 was adopted for this study, however 109 was returned which is 83.5% response rate. The results indicate that management practices, technological innovation, and external environmental factors are the most critical determinants of productivity. The findings underscore the importance of robust project management, investment in workforce training, and the adoption of advanced technologies like Building Information Modelling (BIM). By addressing these factors, construction firms in Awka can enhance efficiency, reduce costs, and support sustainable development.

***Keywords****: [construction productivity, management practices, technological innovation, Building Information Modelling (BIM).}*

**1. INTRODUCTION**

The construction industry stands as a cornerstone of socio-economic development worldwide, driving infrastructure growth, job creation, and economic stability (Oladapo, Afolabi and Tunji-Olayeni, 2017). In Nigeria, the construction sector is particularly critical due to its significant contribution to the Gross Domestic Product (GDP) and its capacity to address infrastructure deficits and housing shortages. Awka, the capital of Anambra State, serves as a microcosm of these dynamics, showcasing a vibrant construction sector marked by diverse projects ranging from residential and commercial buildings to public infrastructure. Despite its evident potential, the construction industry in Awka faces persistent productivity challenges that hinder its ability to fully support regional development.

Productivity in the construction sector is a concept, encompassing the efficient use of resources such as labour, materials, technology, and time to achieve optimal project outcomes. Productivity improvement can lead to cost savings, timely project delivery, and enhanced competitiveness of construction firms (Adebiyi, Kaka and Bello, 2017). Therefore, there is a pressing need to identify and evaluate factors that can contribute to enhancing productivity in the construction industry in Awka, Anambra State.

Globally, labour efficiency has been identified as a pivotal determinant of construction productivity. Studies such as those by Adebiyi *et al.* (2017) emphasize that the availability of skilled labour, workforce motivation, and effective labour-management relations significantly impact productivity levels. This highlights the need for a detailed examination of the local workforce in Awka to determine skill gaps, motivational challenges, and the efficacy of labour-management practices.

Furthermore, the adoption of modern construction technologies represents another critical driver of productivity. Technological advancements, including Building Information Modeling (BIM), prefabrication, and automated construction equipment, have revolutionized construction processes globally, enabling faster project execution, enhanced accuracy, and reduced dependency on manual labour (Oladapo, Afolabi, and Tunji-Olayeni, 2017). However, the construction sector in Awka faces barriers to technological adoption, such as limited awareness, high costs, and inadequate training. Addressing these challenges requires an assessment of the current state of technological utilization and the development of strategies to promote technology integration within the local industry.

Effective project management practices are integral to maximizing productivity, ensuring optimal resource allocation, and minimizing project delays. Research by Oyewobi, Akanbi, and Babalola (2020) underscores the role of robust project planning, coordination and scheduling in enhancing construction productivity. The regulatory framework governing the construction industry in Awka also plays a crucial role in shaping productivity outcomes. Evaluating existing project management practices and identifying best practices for improvement can serve as a catalyst for change in the sector. Oyewobi et al. (2020) argue that reforming regulatory policies to streamline procedures and enhance transparency is vital for improving construction sector performance. Similarly, efficient supply chain management is indispensable for ensuring the timely delivery of materials and equipment to construction sites. Delays in procurement and logistics often disrupt project schedules, escalating costs and diminishing productivity (Adebiyi et al., 2017). By analyzing supply chain dynamics and addressing bottlenecks, stakeholders can optimize material flow and enhance operational efficiency. Tam, Toan, Hai and Quy (2021) observed that work discipline and labour experience and skill are the key factors of productivity. Rayan, Islam, Makarand and Kim (2022) outlined the following as factors of productivity in the construction industry; unskilled labor and improper workforce training and development; poor logistics; errors, omissions, and rework; work area congestion and overcrowding; and insufficient coordination.

**1.1 Problem Statement**

The construction industry in Awka, Anambra State, is a critical driver of economic growth, yet it faces numerous productivity challenges that hinder its potential. Infrastructure deficiencies, including inadequate roads, utilities, and public amenities, significantly disrupt construction activities, causing project delays and escalating costs (Adeleke, Bahaudin, Kamaruddeen, & Bamgbade, 2018). Regulatory bottlenecks, characterized by bureaucratic inefficiencies and inconsistent permitting processes, further exacerbate these challenges, discouraging investment and innovation in the sector (Oladapo et al., 2017).

Moreover, the shortage of skilled labor in the construction workforce contributes to inefficiencies and compromises project quality, despite the availability of a large labor pool (Oladapo et al., 2017). Compounding these issues are supply chain disruptions, including inconsistent material delivery, price volatility, and quality control problems, which lead to delays, cost overruns, and stakeholder disputes (Adeleke et al., 2018).

Addressing these challenges is essential to enhancing productivity and achieving sustainable development in Awka's construction sector.

**1.2 Significance of the Study**

Enhancing productivity in the construction industry in Awka, Anambra State, Nigeria, holds significant importance for several reasons. Firstly, to the clients, improved productivity can lead to cost savings, timely project completion, and better-quality infrastructure, thereby contributing to economic growth and development in the region (Oyewobi *et al.,* 2020). Secondly, to the construction firms, increased productivity can enhance the competitiveness of construction firms operating in Awka, attracting investment and fostering innovation in the sector. Thirdly, to the general public, addressing productivity challenges in construction can create employment opportunities and improve livelihoods for residents of Anambra State.

Finally, by identifying and evaluating factors for enhancing productivity, this study can provide valuable insights and recommendations for policymakers, industry stakeholders, and researchers, facilitating evidence-based decision-making and interventions aimed at driving sustainable growth in the construction sector.

**1.3 Aim and Objective of the Study**

This aim of this study is to identify key factors that contribute to enhancing productivity in the construction industry in Awka, Anambra State, Nigeria with a view to improving practical measures to facilitate its adoption whereas the objective is to assess the key factors influencing productivity in the construction sector in the same study area.

**1.4 Review of related literature**

Productivity in the construction industry plays a vital role in determining project efficiency, cost management, and economic growth. Defined as the ratio of output to input, it encompasses labor, materials, and equipment used to achieve project goals. Poirier, Forgues, and Staub-French (2017) emphasize that productivity improvement leads to cost savings and enhanced resource utilization. In Nigeria, the construction sector’s contribution to GDP demonstrates its economic relevance, with studies suggesting that even a 1% improvement in productivity can generate significant economic benefits (Barbosa et al., 2017). High productivity levels also align with sustainability goals, reducing waste and environmental impact (Darko and Chan, 2017).

**1.4.1 Factors Influencing Productivity**

***1.4.1.1. Labor-Related Factors***

The skills, motivation, and experience of workers are critical to productivity. Training and development improve workforce capabilities, while job satisfaction and morale contribute to performance (Fulford and Standing, 2014; Love et al., 2016).

***1.4.1.2. Materials and Equipment***

Availability, quality, and timely delivery of materials significantly impact construction schedules and costs. Advanced technologies such as robotics and prefabrication enhance efficiency and reduce manual labor (Ahmed, Azhar, and Carlton, 2018).

***1.4.1.3. Management Practices***

Effective project management—encompassing planning, scheduling, and monitoring—supports productivity. Collaborative approaches, such as integrated project delivery and lean construction, promote efficiency and teamwork (Ballard and Howell, 2003).

***1.4.1.4. Technological Innovations***

Building Information Modeling (BIM) and automation facilitate improved planning, visualization, and error reduction. BIM, in particular, has demonstrated productivity gains by enhancing communication and reducing rework (Cao et al., 2018).

***1.4.1.5. External Factors***

Weather, regulations, and economic conditions influence productivity. Challenges such as material price volatility and skill shortages necessitate proactive risk management strategies (Fulford and Standing, 2014).

**1.4.2 Strategies for Enhancing Productivity**

Enhancing productivity in the construction sector requires a multifaceted approach that targets inefficiencies and optimizes processes. One effective strategy involves the integration of lean construction principles and Building Information Modeling (BIM). Lean construction focuses on eliminating non-value-adding activities, streamlining workflows, and fostering continuous improvement, while BIM provides a digital platform for detailed visualization and coordination. The combination of these methodologies facilitates better collaboration among stakeholders, reduces errors and delays, and improves overall resource utilization, making construction processes more efficient and cost-effective.

Another crucial area is workforce development, which addresses the skills gap that often hinders productivity in the industry. By investing in training and apprenticeship programs, construction companies can enhance worker capabilities and performance. Continuous professional development equips workers with the knowledge and skills needed to adapt to modern construction technologies and methodologies, ultimately leading to higher efficiency and better project outcomes. Additionally, a skilled and motivated workforce contributes to lower turnover rates and increased job satisfaction, both of which positively impact overall productivity.

Sustainable practices also play a significant role in improving productivity while addressing environmental concerns. Adopting eco-friendly designs and energy-efficient methods promotes efficient resource use and minimizes waste, contributing to cost savings and long-term project viability. Incorporating renewable materials and optimizing energy consumption not only enhances environmental stewardship but also aligns construction projects with modern regulatory standards and market demands. This dual focus on sustainability and efficiency ensures that projects remain competitive and socially responsible.

**1.4.3 Challenges and Barriers**.

**1.4.3.1 Use of Non-traditional Tools**

Construction industry must advance with the advancing world, the use of ttraditional tools like paper and pen make passage of information difficult and they are not free from errors and can make it difficult to disseminate information efficiently, leading to delays and miscommunications that can impact project timelines and budgets. Given the complexity of construction projects, it can be challenging to keep track of all the changes that occur on a daily basis – think of how daily reports, punch lists, and blueprints are constantly updated. Considering the number of persons involved in construction, employing digital tools fast tracks communication process.

1.4.3.2 **Non-effective Time Management**

Less time is spent on the actual construction work than in planning, securing materials and equipment. This results inefficient use of time which in turn leads to projects exceeding their deadline and significant cost overruns.

**1.4.5 Research Gap**

The literature reveals a gap in understanding how localized factors uniquely influence construction productivity in Awka, Anambra State. While global and national studies provide valuable insights, they often fail to consider regional specifics such as local labor market dynamics, material availability, and regulatory challenges unique to Awka. Furthermore, the adoption and impact of advanced technologies like Building Information Modeling (BIM) and lean construction remain unexplored within the constraints of smaller urban settings like Awka. This gap highlights the need for region-specific research to develop targeted strategies for improving productivity in the local construction sector.

**2.** **METHODOLOGY**

The study utilized descriptive research design. A process for data gathering, this involves the gathering of quantitative data by means of structured questionnaires to construction practitioners and professionals so as to ascertain quantitative data to support the findings. The population of this study is 194 which are made up of registered professional in their various professional bodies in Anambra State, thus 63 builders, 21 architects, 67 civil engineers and 43 surveyors (NIA, NIOB, NSE and NIQS, 2024) and thus it was restricted to the stakeholder in building industry. The researcher employed simple random sampling technique for this study. The sample size for this study was determined using Taro Yamane’s formular as cited in Ogunoh (2008). The sample size of 131 was adopted for this study.

The data for this study was gathered from two sources. Namely primary and secondary source. The primary sources of data for this study raw data collected with the use of designed questionnaire. The secondary data for the study is pulled mainly from available online journal materials, articles and studies conducted by other researchers on the related topic and textbooks.

**3. RESULTS AND DISCUSSION**

In the analysis of data obtained on the research, descriptive statistics will be adopted. Tables, means, standard deviation and percentages were used to describe the results.

**Table 1. Key factors influencing productivity in the construction sector in Awka**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S/N | Factors | SA | A | U | D | SD | ∑F | Mean | Ranking |
| 1 | Labour-related Factors | 41 | 48 | 20 |  0 | 0 | 109 | 3.89 | 5th |
| 2 | Material and Equipment | 69 | 31 | 9 | 0 | 0 | 109 | 4.00  | 4th  |
| 3 | Management Practices | 101 | 8 | 0 | 0 | 0 | 109 | 4.83 | 1st  |
| 4 | Technological Innovations | 98 | 11 | 0 | 0 | 0 | 109 | 4.67 | 2nd  |
| 5 | Environmental and External Factors | 78 | 31 | 0 | 0 | 0 | 109 | 4.33 | 3rd  |

**Source**: Researcher’s Field work, 2024

From table 1 above, for the key factors influencing productivity in the construction sector in Awka, Anambra State, the respondents agreed that “management practices” ranked the most factor as it had a mean score of 4.83. Next to it was the “technological innovations” and the “environmental and external factors” as they had a mean score of 4.67 and 4.33 respectively. However, all the respondents strongly agreed on the above as the key factors influencing productivity as they all had an average mean value above 4.00.

**4. CONCLUSION**

Based on the findings the study shows that management practices were the most factor influencing construction productivity, the study area according to Table 1. The study underscores the pivotal role of effective human resource management (HRM) in enhancing productivity within the construction sector in Awka, Anambra state.

**DISCLAIMER (ARTIFICIAL INTELLIGENCE)**

 Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

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