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Managing the Challenges to the Application of Artificial Intelligence in the construction industry in Ghana: A Sustainable Approach

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Abstract

The incorporation of Artificial Intelligence (AI) into the built environment industry has the capacity to completely transform the ways in which buildings and infrastructure are designed, constructed, and managed. This research examined the present condition, challenges and future potential of AI implementation by built-environment professionals in Ghana. This paper uses the quantitative methods with data collected from built-environment professionals such as architects, engineers project managers and quantity surveyors. Using convenience sampling, 200 questionnaires were distributed using google forms with 182 received indicating a response rate of 91%. The analysis response was done using descriptive analysis. Even though respondents were aware of the vast benefits of AI tools, 51.6% indicated their awareness of the AI tools but only 19% claimed to have ever used an AI tool. The survey revealed a relatively low level of awareness of the use of AI tools in the built environment. The barriers to the smooth deployment of AI tools include opposition to change (traditionalization), challenges with integration with current system, availability, cost and challenges with consistency with data on Ghana Artificial intelligence (AI) technologies have the capability to optimise many phases of building and urban planning, ranging from design process to project management. Through the application of predictive analytics, artificial intelligence (AI) has the capability to anticipate possible problems, enhance the allocation of resources, and minimise project delays, therefore resulting in more efficient and economically viable construction procedures. The novelty of this study resides in its analysis of the implementation of AI in a swiftly urbanising and emerging economy. Unlike research undertaken in more technologically mature locations, this study focusses on the initial phases of AI integration in Ghana, providing important insights into the obstacles and motivators of AI implementation in comparable settings throughout Africa and other emerging nations.

Keywords: Artificial Intelligence, Built Environment, project delivery, tools and technologies