

Smart Construction Sites in KSA: Challenges and Prospects

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Abstract : Due to the emerging technologies revolution worldwide, the need to exploit and employ innovative technologies for other functions and purposes in different aspects has become a remarkable matter. Saudi Arabia is considered one of the most powerful economic countries in the world, where the construction sector participates effectively in its economy. Thus, the construction sector in KSA should convoy the rapid digital revolution and transformation and implement smart devices on sites. A Smart Construction Site (SCS) includes smart devices, artificial intelligence, the internet of things, augmented reality, building information modeling, geographical information systems, and cloud information. This paper aims to study the level of implementation of SCS in KSA, analyze the obstacles and challenges of adopting SCS and find out critical success factors for its implementation. A survey of close-ended questions (scale and multi-choices) has been conducted on professionals in the construction sector of Saudi Arabia. A total number of twenty-nine questions has been prepared for respondents. Twenty-four scale questions were established, and those questions were categorized into several themes: quality, scheduling, cost, occupational safety and health, technologies and applications, and general perception. Consequently, the 5-point Likert scale tool (very low to very high) was adopted for this survey. In addition, five close-ended questions with multi-choice types have also been prepared; these questions have been derived from a previous study implemented in the United Kingdom (UK) and the Dominican Republic (DR), these questions have been rearranged and organized to fit the structured survey in order to place the Kingdom of Saudi Arabia in comparison with the United Kingdom (UK) as well as the Dominican Republic (DR). A total number of one hundred respondents have participated in this survey from all regions of the Kingdom of Saudi Arabia: southern, central, western, eastern, and northern regions. The drivers, obstacles, and success factors for implementing smart devices and technologies in KSA's construction sector have been investigated and analyzed. Besides, it has been concluded that KSA is on the right path toward adopting smart construction sites with attractive results comparable to and even better than the UK in some factors.

Keywords : artificial intelligence, construction projects management, internet of things, smart construction sites, smart devices

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