



## ***Rapport de veille n° 32***

### **BIM**

**28/02/2022**

**Objectif :** *L'utilisation du BIM en phase de conception et de ses potentiels applications pour la prévention des risques*

La validation des informations fournies (exactitude, fiabilité, pertinence par rapport aux principes de prévention, etc.) est du ressort des auteurs des articles signalés dans la veille. Les informations ne sont pas le reflet de la position de l'INRS.

Les liens mentionnés dans le bulletin donnent accès aux documents sous réserve d'un abonnement à la ressource.

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## 1. Références anglophones

### 1.1 Articles scientifiques

#### [Analysis of the causes and preventive measures of fatal fall-related accidents in the construction industry](#)

AD Rafindadi, M Napiah, I Othman, M Mikić, A Haruna... - Ain Shams Engineering Journal, Volume 13, Issue 4, June 2022

DOI : <https://doi.org/10.1016/j.asej.2022.101712>

Fall-related accident causes severe injuries and deaths in the construction industry. This study analyzed 108 fall fatalities in Malaysia from 2010 to 2018 to find the critical, relevant variables. The findings revealed that this type of accident occurred most frequently in Johor, Penang, and Kuala Lumpur/Putrajaya, and the most affected trade workers were construction laborers. AHP model for the fall-related accident primary factors and sub-factors was also developed to determine their relative weights and priorities. It was discovered that workers' unsafe actions are the primary essential factor contributing to this accident. Results also show that the most critical sub-factors are financial constraints, job complexity at high altitude, dangerous working procedures, unguarded edges/holes at higher elevations, and rushing to complete the job. The findings could help raise safety awareness about fall-related hazards and provide valuable guides for further effective prevention and management plans in Malaysia and countries with similar characteristics.

#### [Accidental safety factors and prevention techniques for high-rise building projects—A review](#)

B Manzoor, I Othman, A Waheed - Ain Shams Engineering Journal, Volume 13, Issue, September 2022

DOI : <https://doi.org/10.1016/j.asej.2022.101723>

Construction is a dangerous occupation due to the unique nature of the activities involved and the repetition of several construction activities. The development of construction industry has a direct impact on the country's economy and thus plays an important role in its growth. The construction industry, on the other hand, is dangerous due to the high rate of accidents and fatalities, as evidenced by alarming accident and fatality statistics. This scenario emphasizes the importance of identifying the safety factors that contribute to accidents in high-rise building projects. As a result, the research was split into two phases. The first phase of the study was concerned with the safety factors that influence accidents in high-rise building projects, and the second phase was concerned with safety prevention techniques that can be used to mitigate the safety factors that influence accidents in high-rise building projects. In addition, a framework has been proposed to aid construction project managers in evaluating the safety factors associated with high-rise building projects. As a result, this framework established a foundation for future researchers to use in high-rise building projects.

#### [Big Data in Construction: Current Applications and Future Opportunities \[PDF\]](#)

HS Munawar, F Ullah, S Qayyum, D Shahzad - Big Data and Cognitive Computing, 2022, 6, 18, 27 p.

DOI : <https://doi.org/10.3390/bdcc6010018>

Big data have become an integral part of various research fields due to the rapid advancements in the digital technologies available for dealing with data. The construction industry is no exception and has seen a spike in the data being generated due to the introduction of various digital disruptive technologies. However, despite the availability of data and the introduction of such technologies, the construction industry is lagging in harnessing big data. This paper critically explores literature published since 2010 to identify the data trends and how the construction industry can benefit from big data. The presence of tools such as computer-aided drawing (CAD) and building information modelling (BIM) provide a great opportunity for researchers in the construction industry to further improve how infrastructure can be developed, monitored, or improved in the future. The gaps in the existing research data have been explored and a detailed analysis was carried out to identify the

different ways in which big data analysis and storage work in relevance to the construction industry. Big data engineering (BDE) and statistics are among the most crucial steps for integrating big data technology in construction. The results of this study suggest that while the existing research studies have set the stage for improving big data research, the integration of the associated digital technologies into the construction industry is not very clear. Among the future opportunities, big data research into construction safety, site management, heritage conservation, and project waste minimization and quality improvements are key areas.

#### **Construction safety and accident control measures in Industry 4.0 era: an overview**

S Majumder, D Biswas - International Journal of Advanced Operations Management, Vol.13, n° 4, 2021, pp 391-408

DOI : 10.1504/IJAOM.2021.120778

Throughout the world, the construction sector is one of the most hazardous industries. It includes building residential houses, roads, workplaces, bridges, highways, tunnels, etc. The job consists of risk and fatalities like working with height, excavation, dust, noise, heavy machinery, and equipment, etc. The construction work under the real estate sector is increasing in developing and underdeveloped countries over the past few years. With the development of these types of work occupational hazards, accidents are also increased in the era of Industry 4.0. In the context of maintenance of safe and healthy work culture, it is very important for the construction sites to establish a safety management system. A safe environment is a necessity for all construction workers to make the quality of work-life better. The safety management system has been included in several policies, procedures, plans, objectives, and responsibilities related to construction site safety. In this study, we have highlighted the different parameters of occupational health and safety and its significance in the construction industry mainly focusing on the real estate sector.

### **1.2Conférence / Ouvrage / Thèse**

#### **The Barriers of Building Information Modelling (BIM) for Construction Safety**

NHM Taat, NH Abas, MF Hasmori - In: Mohamed Noor N., Sam S.T., Abdul Kadir A. (eds) Proceedings of the 3rd International Conference on Green Environmental Engineering and Technology. Lecture Notes in Civil Engineering, 2022, vol 214. Springer, Singapore, pp. 121-130

DOI : [https://doi.org/10.1007/978-981-16-7920-9\\_15](https://doi.org/10.1007/978-981-16-7920-9_15)

Building Information Modelling (BIM) is technology moving in the world of engineering and architecture to the arena of construction companies in charge of construction operational that implement in the construction industry in Malaysia. However, most of the projects that implement BIM just focus on planning the building frame without considering safety planning. Hence, this paper is expected to fill the gap through the exploration of BIM-based on safety planning in Malaysia in previous literature. This paper presents a review of the barriers of BIM for safety planning in Malaysia's construction industry. All the barriers to adopting the BIM for construction safety has been found from previous research publications, such as lack of in-house expertise, lack of training/education on BIM, lack of awareness of BIM, lack of collaboration, client demand, and unsure of government commitment to BIM, high cost of software purchasing, lack of standardizing and resistance to change. All these barriers can be a guideline to the construction industry to solve this issue regarding BIM awareness in the construction industry. Proper safety planning in a project will surely benefit BIM in the construction industry. The research aim can be achieved and beneficial to all parties in the construction industry. This safety planning through BIM may minimize the accident at the project site, prevent hazard, and identify risk in the future.