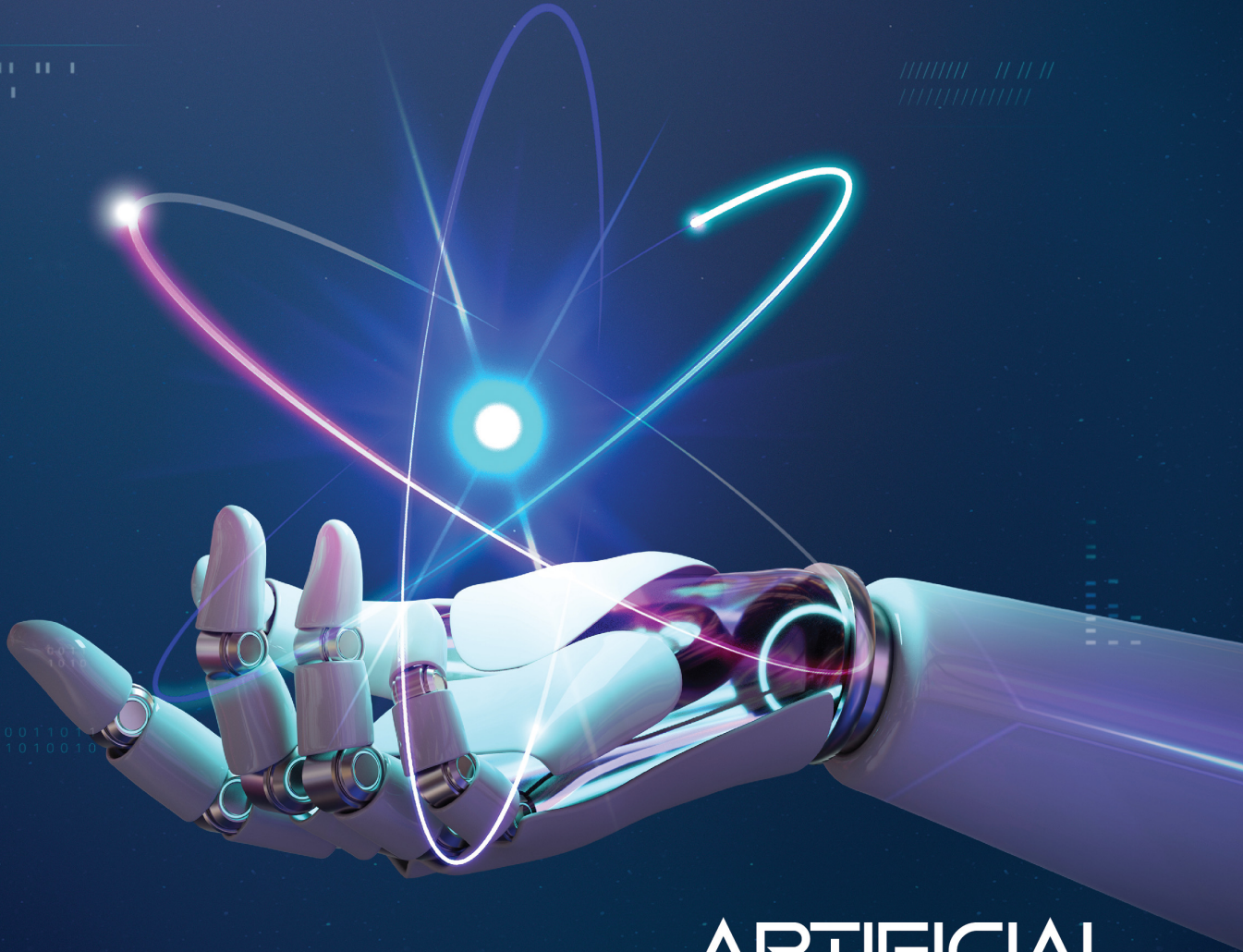


RISE

Catalysing Global Research Excellence



ARTIFICIAL
INTELLIGENCE (AI):
Embracing the Future

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ABOUT THE MAGAZINE

RISE Magazine is published by Office of the Deputy Vice-Chancellor (Research and Innovation) with aims to highlight a research and innovation on multidisciplinary expert of fields in UiTM. It serves as a platform for researcher to showcase their high quality and impactful findings, activities and innovative solution through publication. Contribution of these ideas come from academicians, researchers, graduates and universities professionals who will enhance the visibility of research and stride to elevate Universiti Teknologi MARA to global standards. This is an effort to promote research as a culture that is accepted by all expertise.

ABOUT UiTM

Universiti Teknologi MARA (UiTM) is a public university based primarily in Shah Alam, Malaysia. It has grown into the largest institution of higher education in Malaysia as measured by physical infrastructure, faculty and staff, and student enrollment. UiTM is the largest public university in Malaysia with numerous campuses throughout all 13 states in Malaysia. There is a mixture of research, coursework and programmes offered to the students. The Office of the Deputy Vice-Chancellor (Research and Innovation) also known as PTNCPI (*Pejabat Timbalan Naib Canselor (Penyelidikan dan Inovasi)*) serves as a *Pusat Tanggungjawab* (PTJ) for navigating the research and innovation agenda of the university to achieve UiTM's goals. The PTNCPI office strives to mobilize faculty and campuses, fostering collaboration among researchers, with the aim of transforming the University into a Globally Renowned University by 2025



The Opportunities and Challenges of AI in the Construction Industry

The use of artificial intelligence (“AI”) in various economic sectors has the capability of boosting the efficiency and productivity of business operations. These has sparked much debated lately. This technology has brought about fierce competitions, especially among tech giants (e.g., Google, Amazon, Apple, Microsoft) as it influenced organisational strategies. Furthermore, the dawn of AI is inevitably a force to be reckoned with, especially in the construction industry. The multi-faceted advanced technologies used in the construction industry such as Building Information Modelling (“BIM”), Digital Twinning, the Internet of Things (“IoT”), Virtual Reality/ Augmented Reality (“VR” / “AR”), Blockchain Technology, and Big Data have opened doors of opportunities to revolutionise the entire construction ecosystem. However, there are challenges to consider before any construction organisation could embark on its journey to transform its businesses by employing AI technologies.

The use of AI technology in the construction industry is no other than to transform construction structures to boost productivity, improve business models, and introduce new services to the market. As construction projects are transient and multiorganisational, the construction business would gain more by incorporating AI technology. AI can help the construction sector increase productivity, safety, and quality by automating operations and digitising procedures. Such independence makes building development more evidence-based and less reliant on implicit knowledge. Moreover, unanticipated revisions will be reduced, which will save time and money.

Integrating AI technology in any organisation may seem like an uphill battle to some, as it is not only about the technology per se, but it also concerns with complex operations involving people, processes, security, legislation, and ethics. Therefore, without a clear view or short-term goal to execute an AI-assisted platform, it could cause confusions to the users who eventually may lose interest to adopt AI-related technologies. Companies need to develop a strategy through their AI research and development (R&D) unit and provide a sufficient financial source of investment on AI platforms. These are essential to weigh the opportunities and challenges prior to the actual implementation. According to (Abioye et al, 2021), the opportunities and challenges of using AI on a construction project are listed in the following:



Opportunities	Challenges
Improves consistency and dependability, as AI is unlikely to make mistakes (assuming the data is valid).	Traditional skills are heavily impacted, and employment availability may suffer as a result.
Increases plan accuracy and allow for greater verification.	Allows dispute and skepticism from industry bodies.
Extracts data from a complicated text and easily categorise it based on patterns.	The lack of standardisation in a construction project makes AI implementation problematic.
Increases the consistency of project-related activity to achieve greater quality.	Data security and dependability for massive amounts of data.
Identifies high-risk situations and automatically categorises them into actionable areas.	AI solutions require ongoing investment to keep data accurate.
Enhances on-site workers' productivity and efficiency.	The construction industry's fragmentation may result in data shortages.
Produces results that are easily understood by all stakeholders, which improves communication efficiency.	Ethical, moral, and legal concerns that the government or institutional entities have yet to address.
Reduces the likelihood of on-site accidents and safety issues.	Requires the support of an AI expert, which will incur additional fees.
Prevents unanticipated delays through predictive modeling.	Multi-point accountability among stakeholders may diminish accountability.
Optimises existing work procedures.	AI implementation calls for a transition from traditional business models.
Less time is spent on monotonous tasks by using big data.	High initial upfront cost in AI platform research and development.
Provides firms with a competitive advantage by lowering economic expenses.	AI applications are highly specialised and require ongoing algorithm training to recognise patterns.

The use of AI in the construction industry is evolving. It is predicted that as AI technologies mature, the benefits will far outweigh the obstacles. Given that AI requires a massive quantity of data for algorithm training, large-scale businesses are likely to be better off in the near future. However, these advantages will soon be extended to medium and small-scale businesses as the technology develops over time and become less expensive and time-consuming.

The rapid growth of innovation and technological advances has brought about new opportunities in urban development and construction. AI is a key component of the Fourth Industrial Revolution (also known as sector 4.0) and will continue to grow in the construction sector. In the foreseeable future, the construction sector will regard AI as a primary driver of change to increase efficiency, productivity, work processes, precision, consistency, and dependability. Furthermore, it reduces expenses, unanticipated hazards, and accidents on construction sites. In the next decades, the problems and prospects of AI applications for the construction sector will give a fresh perspective for future investigations.



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