

Construction Sector

Emerging Technologies in Digital Transformation



TABLE OF CONTENTS



EXECUTIVE SUMMARY
KEY FINDINGS
INTRODUCTION

SECTION 1 | Current and future state of digital transformation

- 1.1 Level of Digital Adoption*
- 1.2 Construction technology ecosystem*
- 1.3 Booming start-up and top vendors environment*
- 1.4 Top tech investors*
- 1.5 Evolving client expectations*
- 1.6 New technological capabilities*
- 1.7 Digitally enabled workforce projection*
- 1.8 Supportive legal frameworks*
- 1.9 Launch of large infrastructure projects*

SECTION 2 – Technological advancements offer opportunities

- 2.1 Augmented and Virtual Reality*
- 2.2 Construction Software & Data Ecosystem*
- 2.3 Building Information Modelling (BIM)*
- 2.4 Prefabrication and Modular construction*
- 2.5 Drones*

- 2.6 Robotics*
- 2.7 Cloud and mobile technology*
- 2.8 Higher-definition surveying and geolocation*
- 2.9 3D printing*
- 2.10 Internet of Things (IoT)*
- 2.11 Blockchain*
- 2.12 Autonomous vehicles/machinery*
- 2.13 Digital marketing*

SECTION 3 – Digital transforms the construction process

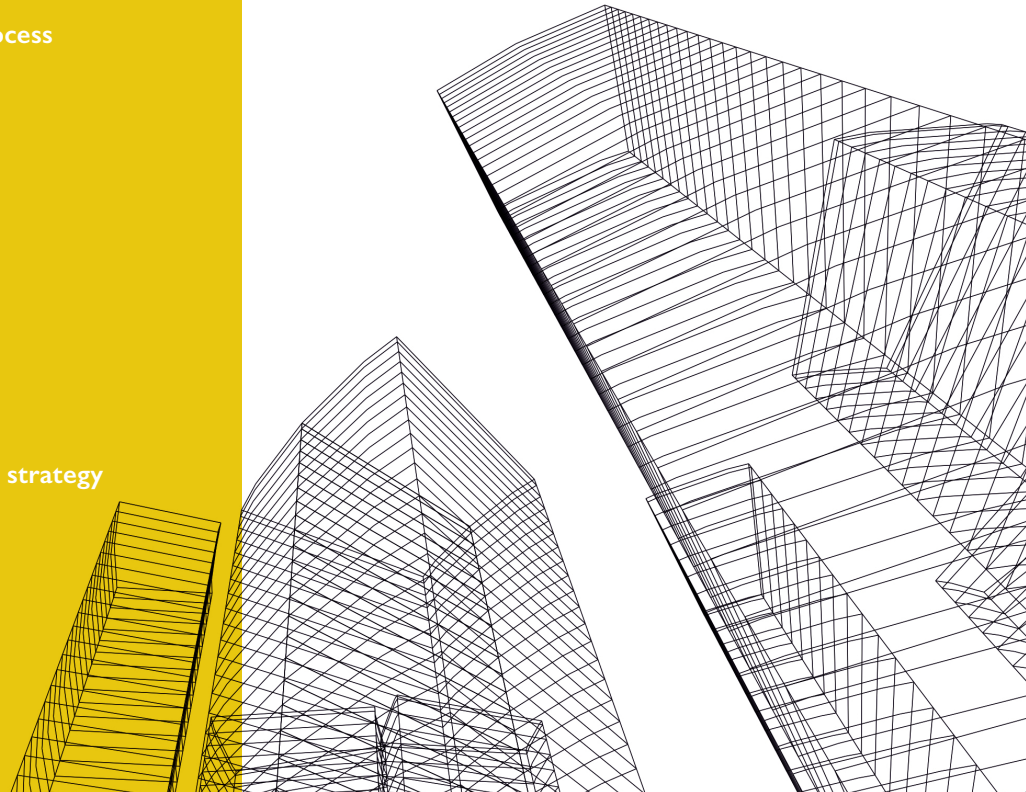
- 3.1 Design*
- 3.2 Construction*
- 3.3 Operations*

SECTION 4 – Smart Technology as a Growth Leader in the Construction Industry

- 4.1 Smart devices | Wearables*
- 4.2 Smart materials*
- 4.3 Smart buildings*
- 4.4 Smart cities*

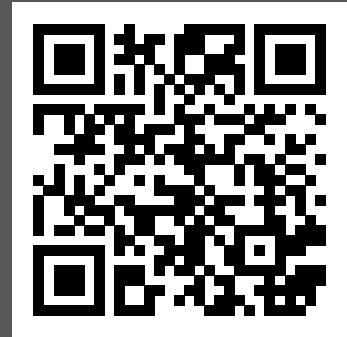
SECTION 5 – Forecast data to support your business strategy

CONCLUSION





WATCH VIDEO



WATCH DIGITAL FUTURES VIDEO

DIGITAL FUTURES

DIGITAL FUTURES is an online content publication platform catering for technology business leaders, decision makers and users, by sourcing and sharing valuable information and best practices in connection to the latest emerging technologies trends and market developments that leverage capabilities and contribute towards enhanced enterprise-wide performance.

LEARN MORE 

Executive Summary

New technology is able to bring about major disruption within the design, construction and connection of structures and workers. The industry's future relies upon the collection of construction data, predictive analysis and the adoption of fresh construction methodologies and equipment. If construction organizations are able to fully transform their work models and procedures, then resulting disruption could lead to construction growth and help in adapting new digital strategies.

With amazing advancements such as robotics, automation, drones, strong data analytics and many other features for upgrading, designing and project management, the construction industry seems to be situated at a perfect stage for adapting to change. Digital is capable of transforming the traditional construction sector into connected construction, representing an environment of linked components, machinery and workers that improve operational efficiency and safety. Connected construction can provide a real 360-degree aspect of ongoing projects. A real 360-degree aspect of ongoing projects empowers connected construction organizations to enhance operational processes by saving time and resources, maximize work performance through

instant progress visibility, manage construction assets involving equipment condition and maintenance more effectively, and plan the design change process with improved procurement and quicker access to resources.

Technological advancements, when effectively adopted, are able to generate value throughout the life cycle of a construction project. Investment towards digital transformation can bring important benefits. Financial benefits derive from aiming towards a fragmented supply chain and decreasing intermediary unnecessary expenditure. It is essential to provide collaboration systems, program controls governance and standards, and general digital expertise.

Time-oriented benefits stem from design improvements, capital delivery and operational efficiency. The ability to provide visualization, combined with a 'data from scratch' strategy generate significant value. Digital is able to lower risk and improve risk assessment in delivery and operation. Principal capabilities incorporate cybersecurity approach, big data analytics and modelling capability risk-based project controls, data quality and governance. Health and safety benefits are generally concentrated towards significantly reducing human intervention in dangerous areas, along with providing adequate resources for identifying, handling and preventing accidents through education and training. Capabilities in data analytics are required in addition to further defined processes, standards, data quality and governance.



Smart is forecast to lead enormous growth to the construction industry over the coming years. Regarding smart devices, which represent the first smart issue discussed, have become increasingly smaller so that they are more portable and easier to use. Smart shoes, belts, helmets, and other devices collect data from all corners of a worksite. Smart devices are able to provide comprehensive data, ensuring worksite safety and human health. Many types of sensors are affordable and offer valuable information on the worksite. A growing number of construction organizations will begin to adopt smart devices and benefit from sensor-collected data and improving operational efficiency.

In addition; smart construction materials (which are also referred to as intelligent materials), active materials and adoptive materials, are those substances that have the capability to respond to changes in their condition or the environment to which they have been exposed, in a useful and controlled manner. Their unique properties make them a crucial component in many fields of engineering and science. They are implemented in civil engineering projects and contribute towards increasing performance, comfortability and the energy efficiency of different structures.

Smart buildings - the third smart issue covered - are structures which are enabled to connect digitally and incorporate both optimized building and operational systems with space controlling through the Internet of Things (IoT), in order to improve the user experience, enhance productivity, lower costs, and diminish physical and cybersecurity threats. Such buildings empower people to interact with each other; leverage technological advancements so as to perform their needed functions, and gain the profits from a digital experience.

The fourth smart issue, smart city technological advancements, enhance the overall quality of life in major urban hubs and impact upon a variety of indicators including safety, time and convenience, health, environmental quality, social connectedness and civic participation, employment, and the cost of living. Smart applications are able to deliver a positive outcome of 10-30 percent improvement across all the above indicators.

Future growth is predicted to lead to the development of traditional smart cities into the fifth and final smart issue, that of super smart cities.

These are an upgraded form of the old conception of smart cities which consists of six main elements covering six sectors (smart economy, smart environment, smart living, smart safety, and smart education). The super smart city is presented as more integrated, since better collaboration and value maximization are highly emphasized.

Key Findings

- Regarding the rate of digital adoption, 5 percent of companies surveyed could be considered to be “cutting-edge visionaries” with 69 percent being considered to be either “followers” or “behind the curve”. 57 percent are considered to be “followers” or “behind the curve”
- The total funding amount accounted for USD 4.34 billion in construction technology since 2009, while capital activity reached 478 funding deals.
- It is forecast that governments will spend USD 57 trillion on infrastructure by 2030 to keep up with global GDP growth. This will constitute an enormous driver for organizations in the construction industry to enhance productivity and project delivery through digital adoption and new practices.
- Regarding the preferred software of 2018, write-ins for accounting software rose by 10 percent during 2018.
- 3D printing construction market was predicted to rise from USD 3 million in 2019 to USD 1,575 million by 2024, at a CAGR of 245.9 percent between 2019 and 2024.

- The capability of generating and delivering the best possible experience at the right time defines the realized value. By providing a good customer experience, brand loyalty can be built, customer lifetime value can rise and marketing waste may be reduced.
- Technological advancements, when effectively adopted, are able to generate value throughout the life cycle of a construction project. Investment towards digital transformation can bring important benefits.
- Smart buildings are significant assets for their stakeholders as they generate differentiation and outstanding growth, improve cost structure and reduce risk. These significant assets come up in real terms and may be realized in numerous different occasions and environments.
- Public and private sectors collaborate through a three-tier development model, in order to generate the best outcomes for citizens. This three-tier continuum represents a long process which is reevaluating the way that smart city digital infrastructure is developed, funded and delivered across the globe.

- Drone market size is forecast to reach USD 43 billion in 2024, when in 2018 it accounted for USD 14.1 billion growing at a CAGR (Compound Annual Growth Rate) of 20.5 percent; almost tripling the initial figure.
- Global Smart Building Market is anticipated to account for USD 81.6 billion by 2025, growing at a CAGR of 34.7 percent during the forecast period between 2017 and 2025. The major determinants which drive growth in global smart building market involve rising demand for integrated security and safety applications, operational efficiency in construction and government initiatives on smart.

Section 1

Table of Contents

Summary

Current and future state of digital transformation

Section 2

Technological advancements offer opportunities

Section 3

Digital transforms the construction process

Section 4

Smart Technology as a Growth Leader in the Construction Industry

Section 5

Forecast data to support your business strategy

Conclusion



FOLLOW OUR THINKING :



Designed and produced by APU Insights Creative Studio
2019 © APU Commercial Information Services
All Rights Reserved

