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Construction 4.0 Market Report by Solution (Hardware, Software, Services), Technology (IoT, Artificial Intelligence, Industrial Robots, and Others), Application (Asset Monitoring, Predictive Maintenance, Fleet Management, Wearables, and Others), End User (Residential, Non-residential), and Region 2024-2032

https://marketpublishers.com/r/CFEE5FFF956AEN.html
Date: July 2024
Pages: 135
Price: US$ 3,899.00 (Single User License)
ID: CFEE5FFF956AEN

Abstracts

The global construction 4.0 market size reached US$ 16.2 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 56.6 Billion by 2032, exhibiting a growth rate (CAGR) of 14.58% during 2024-2032. The growing adoption of advanced technologies to improve efficiency, rising demand for enhanced collaboration and communication, and increasing focus on sustainability and resource optimization in various industries are some of the major factors propelling the market.

Construction 4.0, also known as the fourth industrial revolution in construction, comprises the integration of advanced technologies and digitalization into the construction industry. It involves the application of building information modeling (BIM), the Internet of Things (IoT), automation, robotics, artificial intelligence (AI), and data analytics to enhance efficiency, collaboration, and productivity throughout the construction lifecycle. It enables real-time monitoring of construction progress and provides predictive maintenance of equipment. As it assists in optimizing resource allocation and improving safety protocols, the demand for construction 4.0 is rising across the globe.

At present, the increasing demand for enhanced planning, executing, and managing solutions in the construction industry is contributing to the growth of the market. Apart

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from this, the rising number of construction and infrastructure development activities around the world is strengthening the growth of the market. In line with this, various benefits offered by construction 4.0, such as streamlining project management, reducing costs, minimizing delays, and higher quality outcomes, are bolstering the growth of the market. Besides this, the growing regulatory mandates for safety standards are offering a positive market outlook. Furthermore, the increasing adoption of automation and robotics to perform numerous repetitive tasks is impelling the growth of the market. Additionally, the rising need to address skilled labor shortages is supporting the growth of the market.

Construction 4.0 Market Trends/Drivers:
Rising adoption of advanced technologies to improve efficiency

The rising adoption of advanced technologies, such as building information modeling (BIM) and data analytics, is contributing to the growth of the market. Additionally, BIM enables comprehensive digital representation of a construction project and facilitates better planning, coordination, and visualization. It also optimizes resource allocation, minimizes errors, and enhances project efficiency. On the other hand, data analytics provides insights into project performance and allows for informed decision-making and risk mitigation. Stakeholders are rapidly seeking enhanced operational efficiency and cost-effective solutions in the construction industry. As a result, these technologies assist in streamlining project timelines and reducing the overall costs of a business.

Growing demand for enhanced collaboration and communication

The increasing demand for digitalization in construction due to the rising number of complexities in construction projects is offering a positive market outlook. Moreover, there is an increase in the demand for improved collaboration and communication among stakeholders. Digital platforms and the Internet of Things (IoT) devices play an essential role in enabling real-time information sharing and seamless coordination among various teams and disciplines. In addition, these solutions benefit in enhancing transparency, reducing misunderstandings, and improving decision-making processes by connecting project members remotely and on-site. Furthermore, the ability to collaborate effectively promotes smoother project execution, fewer delays, and improves overall project outcomes.

Increasing focus on sustainability and resource optimization

The rising focus on sustainability and resource optimization in the construction industry

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is supporting the growth of the market. In addition, there is a rapid integration of advanced technologies that maintain environmental sustainability while reducing carbon emissions in the environment. Apart from this, smart sensors and energy-efficient systems are integrated into buildings and construction processes to monitor energy consumption, water usage, waste generation, and enhance resource optimization. This data-driven approach allows for the identification of areas where resources can be conserved, which further leads to cost savings and reduced environmental impact. Furthermore, the rising demand for these solutions among investors to maintain sustainability goals and address resource scarcity is positively influencing the market.

Construction 4.0 Industry Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the global construction 4.0 market report, along with forecasts at the global, regional and country levels from 2024-2032. Our report has categorized the market based on solution, technology, application and end user.

Breakup by Solution:

Hardware
Software
Services

Hardware represents the largest market segment

The report has provided a detailed breakup and analysis of the market based on the solution. This includes hardware, software, services. According to the report, hardware represented the largest segment.

Hardware refers to tangible technological devices and equipment that are integrated into construction processes to enable digital transformation. This includes a wide range of devices, such as sensors, drones, three-dimensional (3D) printers, robots, and wearable technology. They are crucial in gathering real-time data, facilitating automation, enhancing communication, and optimizing resource utilization. Moreover, sensors and drones provide accurate data for monitoring progress and identifying potential issues. In addition, 3D printers and robots assist in automating tasks and improving efficiency and precision while wearable technology enhances worker safety and productivity.

Breakup by Technology:

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IoT
Artificial Intelligence
Industrial Robots
Others

IoT accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the technology. This includes IoT, artificial intelligence, industrial robots, and others. According to the report, IoT represented the largest segment.

IoT is a network of interconnected devices and objects that collect, exchange, and analyze data through the internet. In construction, IoT plays a vital role by enabling real-time monitoring, automation, and data-driven decision-making. IoT devices, such as sensors and wearable technology, are embedded within construction sites and equipment to collect valuable information on factors, such as temperature, humidity, equipment performance, and worker activities. This data is then transmitted and processed to offer insights that enhance project management, resource allocation, and safety protocols.

Breakup by Application:

Asset Monitoring
Predictive Maintenance
Fleet Management
Wearables
Others

Asset monitoring holds the biggest market share

The report has provided a detailed breakup and analysis of the market based on the application. This includes asset monitoring, predictive maintenance, fleet management, wearables, and others. According to the report, asset monitoring represented the largest segment.

Asset monitoring involves the continuous surveillance and analysis of physical assets throughout their lifecycle, ranging from construction equipment and machinery to complete structures. This practice comprises various technologies, such as sensors, a

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global positioning system (GPS), and data analytics to track asset performance, location, and condition in real-time. In line with this, it enhances operational efficiency by enabling predictive maintenance, optimizing resource utilization, and preventing downtime. It also aids in inventory management and improving asset lifespan. Apart from this, it minimizes operational disruptions, lowers maintenance costs, and enhances the overall project cost-effectiveness by offering insights into asset utilization patterns and potential issues.

Breakup by End User:

Residential
Non-residential

Non-residential dominates the market share

The report has provided a detailed breakup and analysis of the market based on the end user. This includes residential and non-residential. According to the report, non-residential represented the largest segment.

Non-residential buildings include commercial, industrial, institutional, and infrastructure development. These entities require diverse construction solutions that align with their specific operational needs. In commercial projects, construction 4.0 optimizes space utilization and energy efficiency. In industrial settings, it enhances production facilities through smart manufacturing processes. Apart from this, it aids in creating smart educational and healthcare facilities in the institutional sphere. Additionally, for infrastructure development, it benefits in creating intelligent transportation systems and sustainable utilities. Furthermore, it enhances project outcomes, operational efficiency, and sustainability.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India
South Korea

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Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America exhibits a clear dominance, accounting for the largest construction 4.0 market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America accounted for the largest market share.

North America held the biggest market share due to the presence of advanced infrastructure. Apart from this, the rising integration of digital solutions into construction practices is contributing to the growth of the market in the region. In line with this, the increasing demand to enhance project efficiency is supporting the growth of the market. Besides this, the rising number of commercial and industrial infrastructure projects is impelling the growth of the market in the North America region.

Competitive Landscape:
Key players are integrating building information modeling (BIM) to create detailed digital representations of projects. This enhances collaboration, minimizes errors, streamlines project management, and more efficient planning and execution. Besides this, companies are deploying IoT devices and sensors on construction sites and equipment

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to monitor conditions in real-time. This enables proactive maintenance, enhances safety protocols, and provides valuable data for informed decision-making. In line with this, major manufacturers are implementing digital twin technology that involves creating virtual replicas of physical assets that enable simulation and analysis of various scenarios. Also, this assists in design validation, performance optimization, and predictive maintenance.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

ABB Ltd.
Autodesk Inc
Brickeye
CalAmp Corp.
Hexagon AB
Hilti Corporation
Mitsubishi Electric Corporation
Oracle Corporation
Topcon Corporation
Trimble Inc.

Recent Developments:
In November 2022, Trimble and the Hilti Group, a global leader providing innovative tools, technology, software, and services to the commercial construction industry, announced that the Hilti ON!Track asset management system will integrate with Trimble Viewpoint Vista, an ERP solution within the Trimble Construction One suite. This will allow contractors to track and manage their tools and equipment.
In 2021, CalAmp, announced that its subsidiary, Tracker Network (UK) Limited, has launched CalAmp's iOn™ fleet and asset management software in the U.K. to accelerate the speed of smart decision making for fleets.
In January 2023, Topcon Positioning Systems announced the expanding of compact solutions portfolio with 2D-MC automatic grade control solution for compact track loaders. 2D-MC is a low-cost 2D machine control system that is designed to be installed directly onto select grading attachments and provide simplified operational visibility.

Key Questions Answered in This Report

1. What was the size of the global construction 4.0 market in 2023?

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2. What is the expected growth rate of the global construction 4.0 market during 2024-2032?
3. What has been the impact of COVID-19 on the global construction 4.0 market?
4. What are the key factors driving the global construction 4.0 market?
5. What is the breakup of the global construction 4.0 market based on the solution?
6. What is the breakup of the global construction 4.0 market based on the technology?
7. What is the breakup of the global construction 4.0 market based on the application?
8. What is the breakup of the global construction 4.0 market based on the end user?
9. What are the key regions in the global construction 4.0 market?
10. Who are the key players/companies in the global construction 4.0 market?

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