

Engineering and Construction Digital Services 2024 Market Insights

Transforming construction
operations through digitization

January 2024

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- The E&C sector is accelerating the adoption of digital platforms and transformative technologies to manage the increasing supply chain risk.
- Construction firms are embracing advanced technologies to mitigate the impact of labor market transitions.
- Climate mandates are compelling E&C enterprises to adopt digital technologies to reduce carbon emissions.
- Construction firms are adopting diverse technologies to manage project timelines and avoid budget overspends.
- E&C firms are capitalizing on generative AI advancements by investing in startups and partnering with niche players.

Key contacts (Page 15)

Executive summary

Key market drivers



Increasing operational costs due to supply chain disruptions



Growing labor market transitions and an aging workforce



Ensuring compliance with climate regulations



Delaying project timelines causes significant budget overruns



Exploring the adaptability of generative AI across the value chain

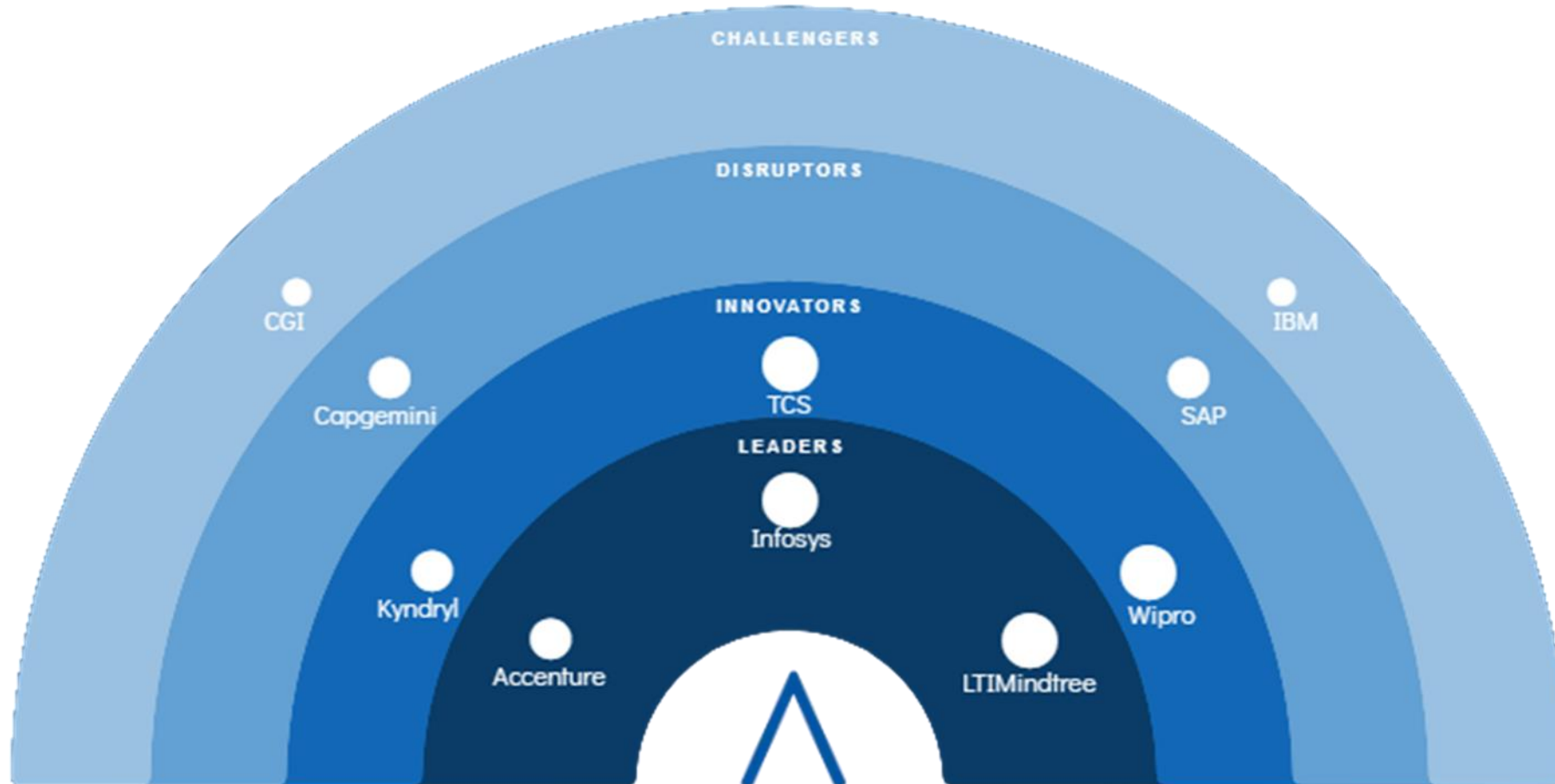
Enterprise response

- E&C firms are accelerating the adoption of cloud platforms to enable supply chain visibility, integrate predictive analytics capabilities, and improve cost efficiencies.
- Construction companies are leveraging niche industry capabilities, such as BIM software, in their operations, offering real-time supply costs and availability updates to ensure timely deliveries.
- Construction companies are turning to robotics and automation. These advanced tools create new-age roles, promote safety, encourage teamwork, and attract the next generation of tech-savvy workers.
- These firms use modular construction and prefabrication technology in response to market changes, enabling engineers to design and assemble building components in controlled factory settings.
- E&C firms are using advanced sensors for real-time carbon emissions monitoring. This data-centric method aligns with sustainability and climate policies, optimizing resource use and reducing environmental impact.
- They also use VR and digital twin technology to explore possible emissions from construction projects before construction and make design revisions accordingly.
- E&C firms use project lifecycle management software to streamline workflows, boost efficiency, and enhance collaboration, improving overall project management and reducing project delays.
- These companies are accelerating their digital strategies by leveraging cloud platforms, such as SAP S/4HANA, to provide custom, scalable solutions on demand, reducing project timelines.
- E&C companies are exploring possible use cases of generative AI and how it can enhance the productivity of existing processes. They are investing in generative AI startups and are adopting niche AI platforms.
- Generative AI offers potential use cases such as sustainable design suggestions, enhanced material selection, and optimized layouts for enhanced energy use.

Avasant recognizes 10 top-tier service providers supporting the engineering and construction industry in digital transformation



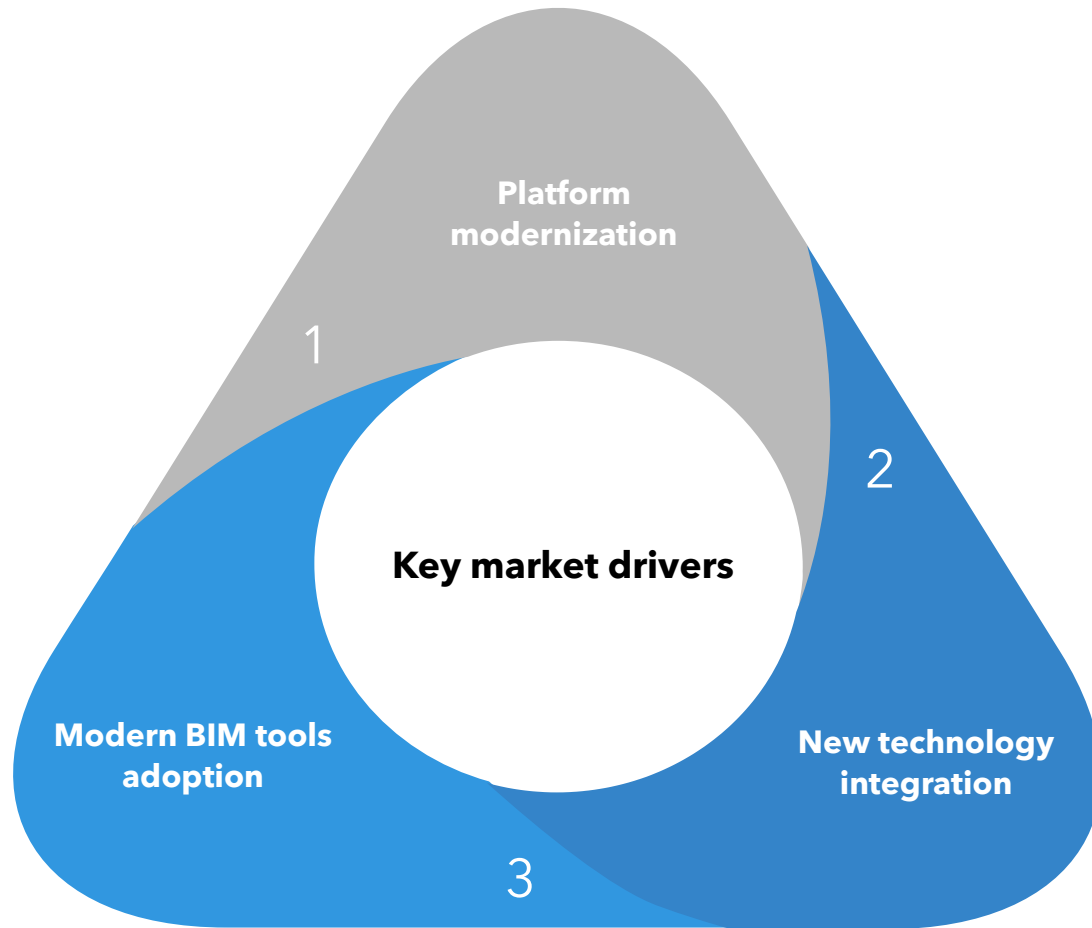
Practice maturity ○ ○ ○






Note: Please refer to Avasant's *Engineering and Construction 2024 RadarView* for detailed insights on service providers and supply-side trends.

The E&C sector is accelerating the adoption of digital platforms and transformative technologies to manage supply chain risk

When construction materials do not arrive on schedule, it can lead to work stoppages and budget overruns. E&C firms' adoption of digital technologies and modern tools has enabled a better preparedness for supply chain disruptions.



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TATA PROJECTS
In October 2023, Tata Projects partnered with SAP to adopt S4/HANA across verticals to modernize its IT infrastructure. This will increase its efficiency in managing orders, inventory, and general contractors, easing supply chain problems.
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MCA ARCHITECTS **WASP**
Tecla House in Italy was built using local clay and a 3D printer for efficient, cost-saving construction with less waste, easing construction supply chain issues. WASP's Starter Kit provides all the tools for 3D printing for small communities anywhere.
- 
TATA CONSULTING ENGINEERS LIMITED
TCE used BIM for intelligent information management, reducing vendor clashes, streamlining the supply chain, and improving cost efficiency through real-time updates, ensuring completion of phase 1 before its 2023 deadline.

Construction firms must invest in technology initiatives to mitigate supply chain risks and enable business agility. By investing in technology, they can deliver projects on time and within budget, ultimately meeting customer expectations and contributing toward a sustainable future.

Construction firms are embracing advanced technologies to mitigate the impact of labor market transitions

The E&C sector's sluggish approach to technology adoption and risk-prone nature make it less appealing to the tech-savvy younger workforce.

Key challenges	Description	Illustrative examples
 <p>Managing labor shortage</p>	<ul style="list-style-type: none"> The E&C industry is using advanced technologies, such as robotics and modular construction, to meet project timelines and ease the pressure on the workforce. 	 <ul style="list-style-type: none"> In September 2023, Forta PRO, a Latvian firm, completed the UNITY Malmö project in Sweden, with 90%-95% of the construction done off-site, reducing costs and health risks for workers.
 <p>Ensuring worker safety</p>	<ul style="list-style-type: none"> In construction, risks from heavy machinery, electrical equipment, and high-altitude work are common. Advanced technology, such as drones, can monitor site hazards, boosting worker safety. 	 <ul style="list-style-type: none"> Worley, a construction firm, uses IoT devices for real-time worker tracking and safety incident reporting. This ensures increased productivity and efficient risk management on sites.
 <p>Increasing skill gap</p>	<ul style="list-style-type: none"> Rising industry costs stem from an aging workforce and a skilled labor shortage as safer, higher-paying technology jobs lure away younger tech-savvy workers. These factors add pressure to E&C firms. 	 <ul style="list-style-type: none"> Skanska leverages digital coaches to enhance employee efficiency and technology use. They bridge the gap between employees, construction sites, and subcontractors.

While addressing skill gaps, E&C companies should explore digital avenues to enhance the capabilities of their current employees, thereby accelerating the integration of future technologies. Digital skill enhancement platforms could solve this issue.

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