BDO

The Role of AI in the Construction Sector

Opportunities, Challenges, and Governance

WRITTEN IN
COLLABORATION WITH

Browne Jacobson

The construction sector, a £110 billion industry that supports over 3 million jobs (10% of UK workforce), is undergoing a significant transformation driven by AI and digital technologies. With new opportunities emerging for efficiency and innovation, companies must also navigate challenges such as high costs, skills gaps, and regulatory complexities.

This article, written by **BDO** in collaboration with **Browne Jacobson**, consolidates insights from our recent roundtable discussion with construction leaders and digital experts, highlighting key takeaways and actionable recommendations to help organisations adapt to this changing landscape.

Images featured in this article have been generated with the assistance of AI, using descriptive prompts to align with the report's theme.

Economic Landscape

Challenges and Opportunities

The construction sector plays a pivotal role in the UK economy, contributing over 7% of GDP. Its activity is divided between new builds, which account for 60%, and repair and maintenance, making up the remaining 40%.

Despite the current market challenges, the sector has demonstrated consistent growth over the past eight months, with the Construction PMI at 54.2 in October 2024. Inflation has significantly decreased to 2.3% from its peak of 11% in May 2022, and interest rates have been reduced by the Bank of England in November 2024 to 4.75%, providing some relief to businesses.

Concerns however still remain about the lack of order pipelines beyond 2025/26, creating uncertainty for the future. Moreover, profitability is under pressure due to rising Employer National Insurance Contributions and increased minimum wage costs. High-profile insolvencies, including ISG, Carillion, Buckingham Group, M J Lonsdale and Henry Construction, have also underscored persistent vulnerabilities within the supply chain.

Amid these challenges, staying competitive demands that businesses remain agile and proactive in adapting to key trends. Now, more than ever, construction companies are debating how to prioritise ESG and decarbonisation goals, alongside digital transformation and AI adoption, to remain resilient and future-proof. These innovations not only help address regulatory and environmental demands but also equip firms with the tools to operate more efficiently, manage risk, and position themselves as leaders in a rapidly evolving market.

AI in Construction

Practical Applications

Artificial Intelligence is revolutionising construction, as it brings clear benefits such as increased efficiencies, cost savings, enhanced safety and better quality. Use cases of AI span multiple stages of the project lifecycle, including:

1. Back-Office Efficiencies
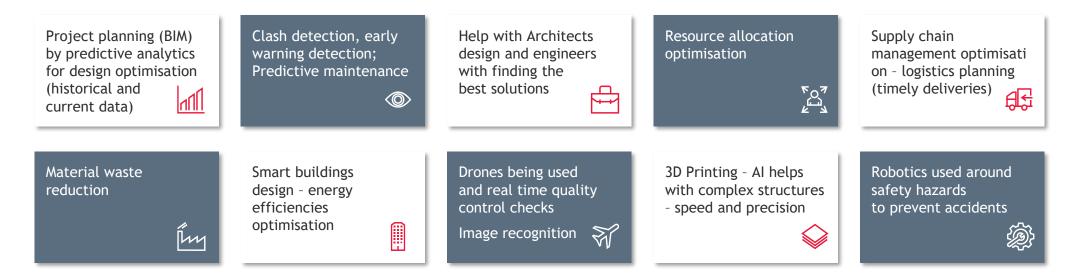AI can automate repetitive administrative tasks, delivering immediate value.
▶ **Payment Reviews:** AI can automate cost analysis, data extraction, and payment reconciliation. This reduces the likelihood of errors, speeds up validation processes, and lowers labour costs.

▶ **Supply Chain Management:** AI can monitor inventory, logistics planning to ensure timely deliveries, predicts shortages, and forecasts supply-demand trends. This ensures companies can maintain appropriate inventory levels, reduce storage costs, and respond quickly to delays.

2. Project Planning and Execution
AI optimises project design planning by automating resource allocation, monitoring budget spend, and flagging potential overages. These functions streamline decision-making and minimise risks of

burnout from manual, repetitive tasks. AI also enhances Building Information Modelling (BIM) by enabling predictive analytics, identifying potential clashes in designs, and improving construction sequencing. This reduces rework and accelerates project completion and improves margins.

3. Safety and Risk Management
Using computer vision (image recognition), AI can detect safety hazards in real time, such as missing hard hats or unsafe forklift movements. These features enhance compliance and reduce accident risks, making sites safer for workers.

Project planning (BIM) by predictive analytics for design optimisation (historical and current data)	Clash detection, early warning detection; Predictive maintenance	Help with Architects design and engineers with finding the best solutions	Resource allocation optimisation	Supply chain management optimisation – logistics planning (timely deliveries)
Material waste reduction	Smart buildings design – energy efficiencies optimisation	Drones being used and real time quality control checks Image recognition	3D Printing – AI helps with complex structures – speed and precision	Robotics used around safety hazards to prevent accidents

AI in Construction

Practical Applications

4. Construction Management and Quality Control

Artificial Intelligence plays a crucial role in improving construction management and quality control and minimising waste. By optimising resource allocation and scheduling, AI algorithms ensure more efficient use of time and materials. Predictive maintenance capabilities also allow for real-time monitoring of equipment, helping to identify potential issues before they cause downtime.

Additionally, AI-powered drones and image recognition technologies enable real-time inspections and quality checks, improving accuracy and safety on-site. AI tools also assist in skills matching and provide training simulations, ensuring the workforce is equipped with the right capabilities for each task.

5. Sustainability and Efficiency

Finally, AI-driven tools enhance sustainability by:
- Reducing waste through 3D printing and precision construction.
- Optimising energy usage in smart buildings.
- Identifying materials and methods to lower carbon footprints.

The Challenges to AI Adoption

While AI offers numerous benefits, there are still significant challenges that construction organisations must address:

01 Resistance to Change

Organisational inertia and scepticism about AI's capabilities often hinder adoption. Leadership buy-in and employee engagement are critical for overcoming this resistance. Clear communication about AI's tangible benefits—such as cost savings and improved safety—can foster acceptance.

02 Data Quality and Governance

Effective AI relies on high-quality, well-managed data. Poor governance can lead to errors, bias, and inefficiencies. Organisations must implement strict data management protocols, appoint data stewards, and enforce access controls to ensure data integrity.

03 High Costs and Integration Issues

Many businesses face challenges aligning AI tools with existing systems. Phased implementation of low-cost, high-value AI tools, such as those for supply chain monitoring, can build confidence while reducing upfront investment risks.

04 Third-Party Risks

Partnering with third-party AI providers introduces risks related to data security and compliance. Conducting thorough due diligence and establishing clear contractual guidelines can mitigate these concerns.

How to Build an Effective AI Strategy

BDO and Browne Jacobson Key Takeaways

To build an effective AI strategy, construction companies must approach adoption holistically, integrating AI into their broader business objectives while addressing the unique challenges of the sector.

A structured and well-planned approach ensures that the benefits of AI are maximised, and potential risks are effectively managed. Below we highlight the key areas to focus on:

AI Governance and Ownership

A well-defined governance framework is essential for effective AI implementation. Organisations should assign clear ownership of AI initiatives to ensure accountability and drive progress. To achieve this AI inventories, maturity assessments and other tools which provide visibility over the adoption of AI are crucial. Aligning AI governance with existing structures, such as data governance forums and risk committees, enables businesses to build on their current frameworks while addressing new challenges introduced by AI. This approach fosters consistency and provides a pragmatic path to managing AI-related risks.

Risk Management

Comprehensive risk assessments are critical to understanding the potential impacts of AI, including bias, safety concerns, and data security vulnerabilities. High-risk use cases, particularly those involving critical infrastructure or employment, require heightened scrutiny to align with regulatory expectations and organisational risk appetite. Regular monitoring and evaluation of these risks will enable construction businesses to adapt their strategies and minimise exposure.

How to Build an Effective AI Strategy

Training and Awareness

Continuous training programs are key to equipping employees with the skills needed to work effectively with AI technologies. Building trust in AI systems through education and transparent communication helps overcome resistance to change and ensures cohesive adoption across departments. Encouraging cross-functional collaboration also helps break silos, fostering innovation and ensuring that AI solutions address the organisation's broader needs.

Third-Party Risks

AI adoption often involves third-party providers, creating potential risks in contracts and data sharing. Organisations must assess these relationships carefully, mitigating risks such as data protection breaches or contractual disputes. Establishing clear guidelines and conducting due diligence can help safeguard against unintended liabilities while fostering successful partnerships.

Strategic Communication

Effective communication is vital in driving organisational buy-in for AI adoption. By addressing employee concerns transparently and highlighting AI's benefits, businesses can inspire confidence and encourage behavioural change.

Strategic messaging should emphasise AI's potential to enhance efficiency and innovation while reinforcing the organisation's commitment to ethical and responsible implementation.

Contracting Templates

Organizations must update their contracting templates to include specific AI clauses that reflect the evolving nature of AI procurement. These clauses should cover liability frameworks, data ownership and usage rights, warranties, and indemnities tailored to AI's capabilities and risks.

Regulatory Compliance

Implementing the steps outlined above will help organisations in the construction sector to simplify their compliance efforts and, where necessary, align with emerging regulatory requirements such as those contained in the EU AI Act. Understanding the penalties for non-compliance, which can range from €35 million or 7% of global annual turnover (whichever is higher), underscores the importance of robust regulatory practices.

Conclusion

AI presents transformative opportunities for the construction sector, from enhancing efficiency and safety to driving sustainability.

However, construction companies must take a strategic approach to mitigate risks and unlock value. By implementing strong governance frameworks, fostering a culture of innovation, and investing in training, they can position themselves as leaders in this rapidly evolving landscape.

For more information or to discuss how we can support your AI journey, please get in touch.

Contact Us

This article is the result of a collaboration between BDO UK LLP and Browne Jacobson, combining insights from both teams to provide valuable perspectives. For further information, please get in touch:

PAUL FENNER
BDO | Head of Construction
Paul.Fenner@bdo.co.uk

MARK STUBBS
Browne Jacobson | Partner
Mark.Stubbs
@brownejacobson.com

FRANCIS KATAMBA
Browne Jacobson | Partner
Francis.Katamba
@brownejacobson.com

CHRISTOPHER BEVERIDGE
BDO | Head of Privacy & Data
Protection
Christopher.Beveridge
@bdo.co.uk

ANTHONY NAGLE
Browne Jacobson | Partner
Anthony.Nagle
@brownejacobson.com

JASON GOTTSCHALK
BDO | Cyber Lead Partner
Jason.Gottschalk@bdo.co.uk

JEROEN BASTEN
BDO | Partner – Digital & Risk
Advisory Services
Jeroen.Basten@bdo.co.uk

MICHAEL SADLER
Browne Jacobson | Partner
Michael.Sadler
@brownejacobson.com

MARIOS GREGORI
BDO | Tax Partner
Marios.Gregori@bdo.co.uk

CONOR MANSFIELD
BDO | Associate Director -
Innovation & Technology
Conor.Mansfield@bdo.co.uk

FOR MORE INFORMATION:

PAUL FENNER
Head of Construction
+44 (0)7785773933
Paul.Fenner@bdo.co.uk

www.bdo.co.uk

BDO