AI is Building a Better Construction Industry

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Between tariffs, labor concerns, industry reshoring, and long-simmering housing demand, 2025 is already presenting a mixed bag of new opportunities and challenges. Construction executives remain concerned about talent-related issues, particularly as skilled laborers age into retirement and an already depleted labor pool dries up further.

The effect of tariffs on material costs may run a close second in the race for the top issue keeping industry leaders up at night. Aluminum and steel tariffs took effect in mid-March, with future tariffs expected to impact the cost of additional materials like concrete and lumber, among others. In an interesting sign of the times, one potential tool for mitigating these pain points bridges the gap between areas of concern as seemingly disparate as labor and materials: artificial intelligence (AI).

In constrained and dynamic environments like today's, efficiency becomes paramount — and that's exactly what AI aims to achieve virtually anywhere it's applied. Even in the infancy of AI technology, these solutions are already capable of analyzing vast amounts of data quickly and drawing attention to problems and opportunities alike. For business owners, that means AI can offer support for their decision-making by providing up-to-the-minute analysis of the latest data, quickly uncovering waste or inefficiencies in processes, and generally helping to ensure that the value of resources and impact of initiatives are optimized.

In this article, we'll look at the currently available solutions

that are helping construction companies better meet their safety, resource allocation, contract management, and finance-related needs.

ENHANCING SAFETY ONSITE

One of the industry's most common forms of waste is rework, which causes delays, increases costs, and compromises safety, project timelines, and labor availability. Rework refers to any completed work that needs fixing or altering. It is a notorious safety hazard, estimated to be associated with up to 39% of construction injuries. AI technology can help reduce instances of rework and protect laborers by enhancing safety protocols when rework can't be avoided and reducing rework through the application of building information modeling (BIM) technology.

BIM allows teams to simulate the building process, refining the design and anticipating challenges that would otherwise

arise unanticipated on the jobsite. In the BIM context, AI generally helps automate repetitive design tasks, applies style parameters to designs, or uses real-world scanning data to generate virtual models. That means BIM is easier to work with and more accurate to the real-world equivalent, exactly the features necessary to help avoid rework. There is a wide variety of AI solutions supporting general safety efforts. Some are as simple as monitoring jobsites to track the proper use of required safety equipment, while others scan and issue alerts for potential hazards. Interconnected devices can even feed live data from sensors to monitor sites and trigger alerts as necessary.

FACILITATING SMART CONSTRUCTION MANAGEMENT

Beyond robust safety applications, AI can provide huge advantages when it comes to project management. AI solutions are available for managing inventory, measuring project progress, and scheduling and staffing. These tools can help a site run more efficiently by forecasting, revising forecasts in the face of delays, balancing workloads assigned to crews to prevent fatigue, ensuring materials are available, and much more. AI used in conjunction with technology onsite can also empower managers to take responsibility for more active projects, providing them with on-the-ground perspectives that can be accessed from anywhere there's an internet connection. That accessibility not only means more productivity from key members of the team, but it also helps to ensure that projects receive the dedicated attention they require to meet high quality standards.

SOLVING BACK OFFICE INEFFICIENCY

There are a variety of AI-powered systems designed to make the day-to-day responsibilities of running a business much easier. These include bill paying, submitting invoices, generating reports, and more. Industry-specific solutions are also available for construction and take the concept of an AI-powered back office one step further by incorporating features that assist with estimates, safety, design, quality control, and project planning. These tools can have a significant influence on cash flow and profitability by anticipating material needs, preventing stock-outs and overstocking, and using predictive modeling to find and flag patterns of activity that lead to cost overruns and delays. With help identifying the red flags, those issues can be more easily recognized, avoided, or mitigated before they become costly.

AI can also analyze past financial performance data to generate insightful reports on the profitability of past and present work. That offers great insight that can inform overall business strategy and help determine the types of jobs most worth pursuing. In the context of controls, forensic AI tools can process and analyze payments of all sorts, identifying anomalous payments and other suspicious behavior for further investigation. At its current rate of evolution, there's no telling how much back office support AI will be providing a year from now. Already the most trusting early adopters use AI to automate bank reconciliation. Those brave enough to apply AI in high-risk contexts like reconciliations should be careful to also employ thorough vetting and oversight practices to minimize the chance of errors.

IMPROVING CONTRACTS

Effective contract management is going to become even more essential as costs rise and margins shrink. Make stability and cost efficiency the cornerstone of every contract by leveraging AI-systems to enhance the management of contracts and related processes. AI systems can be configured to analyze contract-related data, recommend optimal terms, monitor compliance, and track performance. These solutions can integrate seamlessly with existing financial management tools to provide constant oversight of contractual obligations and report on their financial ramifications. AI can be particularly useful in helping you determine the details within long-term agreements with suppliers. With this support, your long-term contracts can provide stability while also locking in optimal value. AI can also help in identifying suppliers, making it easier to overcome supply chain disruptions or cut down on expensive transportation costs. Finally, AI can help inform agreements that feature price escalation clauses, using advanced modeling to manage the risks associated with potential increases in material and labor costs.

FUTURE-PROOF YOUR FINANCES

As AI adoption continues, the technology will only offer more crucial business advantages. Protect your competitive edge by adopting systems and practices that will grow alongside your business. Today, AI technology is already offering substantive

benefits by managing and analyzing data to issue reports virtually in real-time, support safety measures, facilitate scheduling, and more. By harnessing it, construction firms can unlock greater efficiency, seize on the right opportunities, overcome persistent challenges, and mitigate some of the factors driving material costs higher.

One final advantage of AI is less about the tools themselves and more about what they mean for our industry. Construction is seen as a stubbornly traditional sector, potentially to a fault. Embracing AI could give your business the future focus it needs to attract young talent determined to push the envelope forward. Offering those young, talented employees the tools they feel are necessary to make an impact could prove the difference between an energetic, driven, and robust workforce, and a dwindling crew that shrinks further with each retirement party.

The future of our industry is taking shape. Where will you fit in?

About the Author

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