




ARTIFICIAL INTELLIGENCE IN THE CONSTRUCTION INDUSTRY

2024 REPORT

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A NOTE FROM OUR CTO

Construction in the age of Artificial Intelligence and Machine Learning

AI is soon to be an important tool in every contractor's toolbox. It is all around us now. It is only a matter of time before we will all be using it to help fulfill our role in building *Canada's* infrastructure.

The successful contractor of the future will engage AI and machine learning in order to - expedite quotations; plan out project schedules and adjust timelines during the build; manage supply chains and RFIs more efficiently; enhance communications with customers, staff, subs, and other stakeholders; track job costing more accurately and in real time; and complete projects on time and on budget. Builders who don't adopt AI or do so too slowly will become less competitive each passing day.

Now is the time to embrace the future and add AI to your tool box. The Net Effect can help you achieve measurable success throughout this exciting journey.



CRAIG HURST
CTO TO THE NET EFFECT

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INTRODUCTION

Artificial Intelligence (AI) and Machine Learning (ML) are rapidly becoming critical components in industries across the globe, revolutionizing traditional processes and driving innovation.

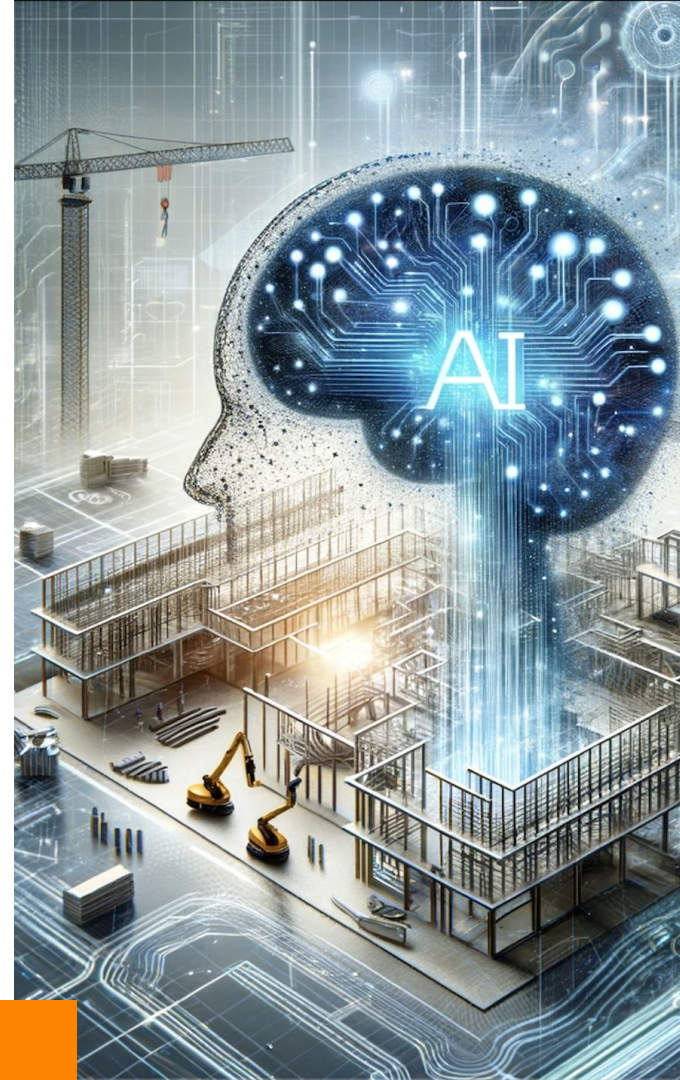
In the construction industry, however, adoption has been slower compared to sectors like manufacturing or finance.

This report provides insights into the current state of AI adoption among small-to-medium-sized construction companies and trades businesses.

The report is based on survey data collected from industry professionals, highlighting key trends, challenges, and expectations for the future of AI in construction.

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"AI seems like the future, but it's hard to see where it fits in with our day-to-day operations right now."

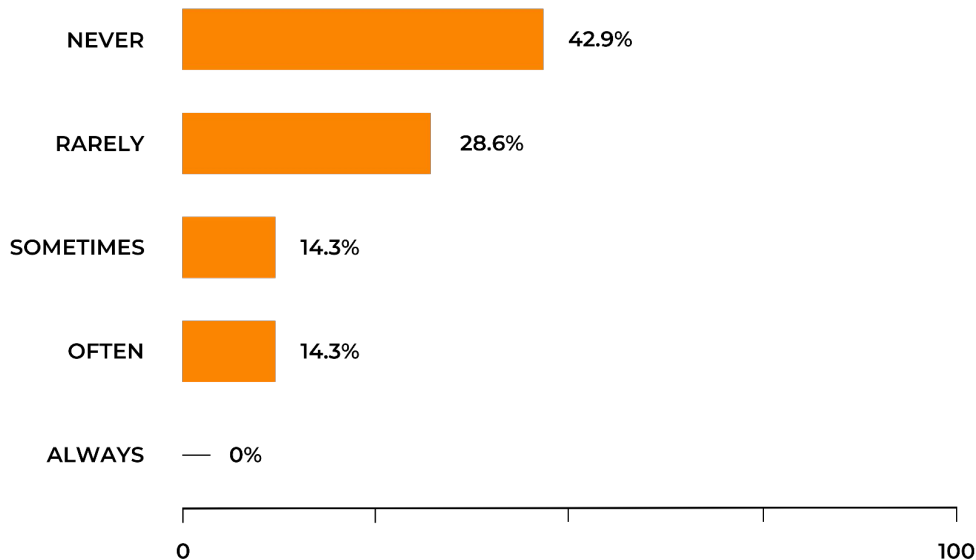
—survey respondent

It's early days...

AI/ML adoption in the construction industry remains nascent, with a significant number of companies either not using these technologies at all or using them on a very limited basis. According to the survey, **over 70% of respondents reported that they 'never' or 'rarely' use AI/ML in their work.** The adoption rates vary depending on the size of the company and the type of construction activity.

"We don't have the budget or the technical know-how to implement AI. It seems out of reach for us right now." —survey respondent

Larger companies, particularly those with **over 50 employees**, are more likely to explore AI/ML, particularly in areas like **project management and safety monitoring**. Smaller firms, especially those with fewer than 20 employees, tend to be more cautious, often citing **resource constraints** and **lack of expertise as barriers**.



This bar chart highlights the frequency of AI/ML use among survey respondents. Categories range from "Never" to "Always," with the bulk of responses in the "Never" and "Rarely" categories.

PRIMARY USE CASES FOR AI/ML

For companies that have started to integrate AI/ML, the most common applications are focused on improving efficiency and safety. The top use cases include:

Project Scheduling

AI algorithms help in optimizing project timelines, predicting delays, and adjusting resources dynamically.

Risk Management

AI tools are used to identify potential risks early, allowing companies to mitigate issues before they escalate.

Safety Monitoring

AI-driven safety systems monitor construction sites in real-time, detecting hazards and alerting workers to prevent accidents.



AI has been helpful in keeping our projects on track, especially in predicting delays due to weather or supply chain issues.

—survey respondent

More use cases

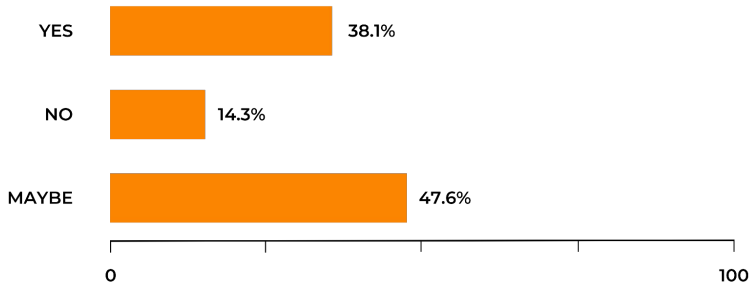
Marketing/Content
creation

Admin/Bookkeeping

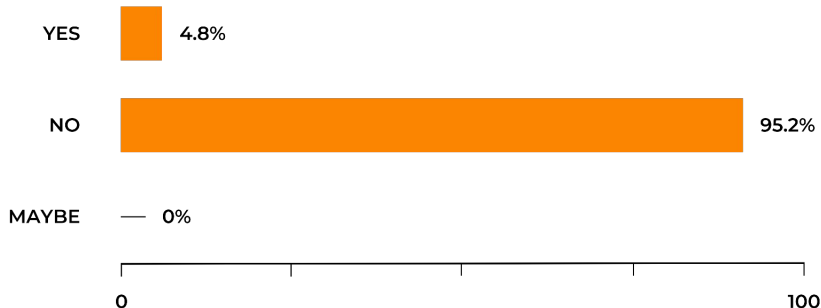
Research

Time tracking

Do you anticipate an increase in AI/ML use in the next 24 months?



Does your organization have a detailed AI/ML implementation plan?



These results indicate that while organizations recognize the potential of AI/ML, many are still in the early stages of exploration rather than execution.

The lack of detailed implementation plans suggests hesitation due to factors such as cost, skill gaps, or uncertainty about ROI.

This is where the Net Effect comes in, guiding businesses through the complexities of AI/ML adoption, helping them move from interest to actionable strategies.

"We're concerned about data privacy. AI tools that track our projects might be sharing too much with third parties."
—survey respondent

While the potential benefits of AI/ML are well recognized—such as **improved efficiency, cost savings, and increased accuracy**, —there are significant challenges that companies face. The most commonly cited challenges include:

- 1 Data Privacy Concerns:** Many respondents expressed worry over how AI systems handle sensitive data.
- 2 Cost of Implementation:** The upfront investment in AI technology is seen as prohibitive, especially for smaller firms.
- 3 Lack of Expertise:** There is a general lack of in-house expertise to manage and maintain AI systems.

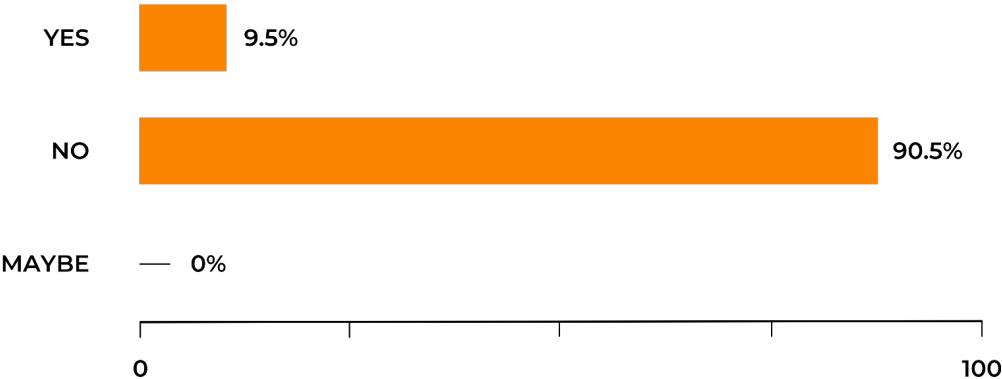


"The cost is the biggest hurdle. We need to see a clear ROI before we can even think about investing in AI."

—survey respondent, on the costs of AI



Do you have policies and/or guidelines for AI/ML utilization?



With 90.5% of companies lacking formal policies on how to implement or govern AI use, it becomes clear that the majority are **not yet equipped to manage the ethical, operational, or strategic implications of these technologies.**

The absence of such frameworks could be attributed to limited understanding or perceived complexity of AI integration, reinforcing the idea that, **while interest is present, structured approaches to AI remain underdeveloped.**

Keeping an EYE on AI

Looking to the future, many respondents expressed cautious optimism about AI/ML. There is significant interest in technologies like predictive analytics and automated project management, which could potentially transform how construction projects are planned and executed.

However, many companies are taking a **wait-and-see approach**, preferring to gather more information and observe the outcomes of early adopters before making substantial investments.

One respondent remarked:

"AI could be a game-changer for us, but we need more **proof**. Right now, it's more of a **buzzword than a necessity**."





"We're keeping an eye on AI, especially for project management. But we need more case studies that show it works in our kind of projects."

—survey respondent

ACTIONABLE STEPS

START WITH A PILOT PROJECT

Focus on a specific area, like safety monitoring or project scheduling, to test AI's effectiveness on a smaller scale.

INVEST IN TRAINING & EDUCATION

Building in-house expertise is crucial. Invest in training your team or consider hiring AI specialists who understand the construction industry.

STAY INFORMED

The field of AI is rapidly evolving. Stay updated on the latest trends and technologies, and be open to experimenting with new tools that could give your business a competitive edge.

LEVERAGE EXTERNAL PARTNERS

Don't hesitate to work with AI vendors or consultants who have experience in construction. They can provide the expertise and support needed to implement AI solutions effectively.



One final thought from a respondent



**"AI isn't going away.
We need to find ways
to make it work for
us, or we risk being
left behind."**



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METHODOLOGY

We invited over 30,000 construction businesses to respond to a survey in June and July 2024 to examine how they are reacting to the emergence of AI/ML in today's industry.

INDUSTRIES REPRESENTED

- | | |
|--------------------------|----------------------|
| General Contractor | Engineering |
| Sub Contractor | Software Development |
| Specialty Trade/Supplier | Modular Construction |
| Architecture/Design | |



Report created by The Net Effect Contractor Advisors Inc.

www.theneteffect.ca

Craig Hurst - churst@theneteffect.ca 1.705.795.8308

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