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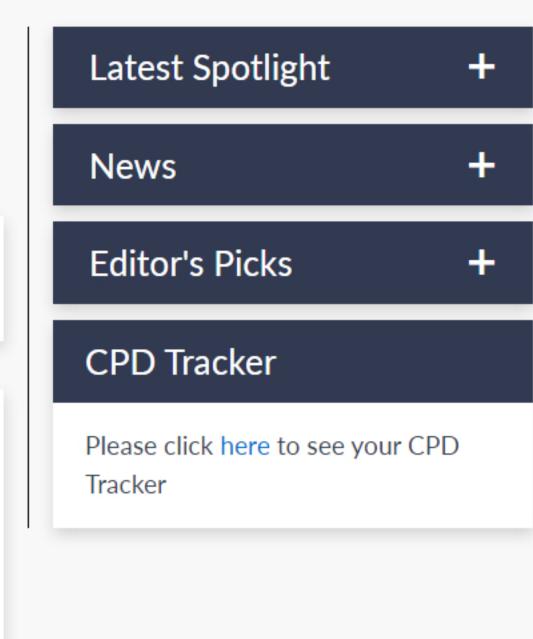# What does artificial intelligence and machine learning mean for tax?

Andrew Burman, FCA, Principal and global practice lead of transformation, Ryan
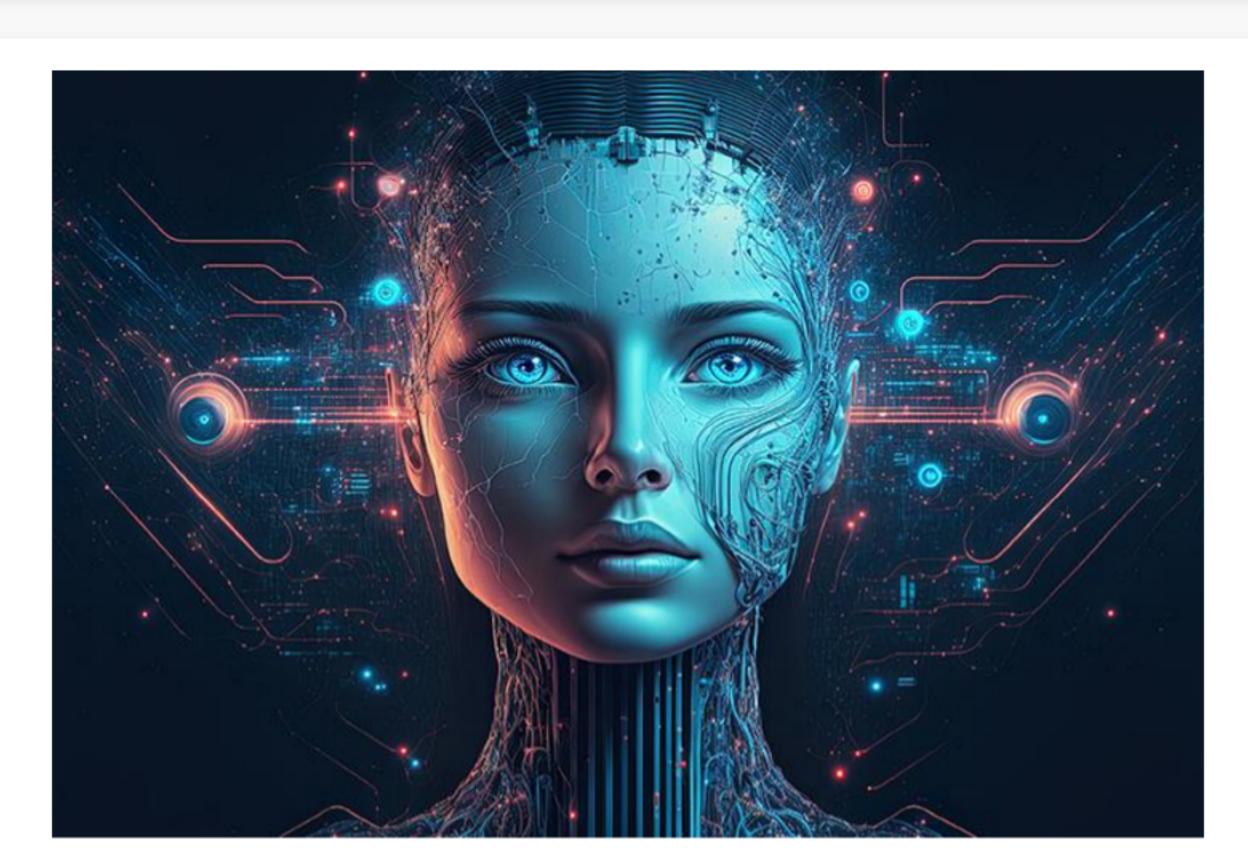📅 22 Apr 2024

Artificial intelligence and machine learning is set to radically transform all aspects of accountancy but how will tax be affected, asks Andrew Burman, principal at Ryan

Artificial intelligence (AI) and machine learning are two technologies that are rapidly transforming almost every industry, and tax is no exception.

With evolving global regulations, the tax landscape is increasingly complex, with more information being requested, in more detail, more often.

The sheer volume of tax data must be understood, and the varied types of data involved means tax stands to benefit vastly from the significant advancements in this technology.

With benefits from processing efficiency, accuracy, compliance, cost savings, and enhanced risk management capabilities, the integration of AI and machine learning promises to transform the way taxes are managed and pave the way for tax to become a profit centre for the business, not a retrospective compliance function.

Some businesses are hesitant to adopt AI and machine learning because of a lack of understanding around how to leverage these technologies effectively and, specifically, how to get started.

Here we answer four of the most common questions posed by our clients.

What Is AI and how does it differ from ML?

Simply put, AI is a broad term for creating systems with learning capabilities, and machine learning is an application that focuses on the use of AI in specific use cases and/or processes.

There is also predictive analytics that involves using statistical techniques and ML algorithms to analyse current and historical data to make predictions about future events or behaviours.

These technologies rely on advanced machine learning models to uncover patterns, correlations, and trends within large datasets in a way humans would not have the capacity to spot.

How does AI differ from traditional rule-based systems?

While rule-based systems rely on fixed rules defined by human experts, AI uses machine learning algorithms to analyse data, identify patterns, and evolve over time without the need for constant manual updates.

Unlike static rules, AI systems continuously learn from user feedback and data inputs, refining their 'rules' dynamically to improve accuracy and effectiveness.

AI may start with a set of rules, or a set of prior period inputs and decisions/outputs, but over time it will build additional knowledge itself. Rules are binary (think of a traditional decision tree), whereas AI and machine learning build levels of confidence (eg, on 0–100% scales).

As such, over time, humans can change the parameters within which these automated systems refer new items for review (for example, based on increasing materiality or lower relative confidence levels).

In other words, the more you interact with an AI-powered system, the smarter it gets, and like an elephant, it never forgets.

What about data security issues?

Data security is a top priority for businesses — and rightly so. However, it is important to keep in mind that there are many ways to leverage AI and machine learning in business, and not all of them involve sharing sensitive data outside of a company's secure information technology (IT) environment.

In fact, some software solutions with built-in machine learning capabilities can function without the need for external data transfer, which is great news particularly when it comes to tax reporting data.

That being said, it is important to note that not all AI-powered systems operate this way. For example, ChatGPT is not a direct user of business data, but rather a provider of information.

In either case, given how relatively new these systems still are, the information provided by them should always be double checked by professionals.

In tax and finance, safeguarding data security and managing risks associated with business data are paramount. Therefore, it is essential for tax departments to have adequate IT support in place before delving into any AI and machine learning initiatives.

Where does the opportunity lie for tax?

AI provides significant opportunities in tax management and the ability to process every line item of data consistently (and evidence this to the authorities) – significant efficiency gains is a potential game changer in terms of confidence and risk management.

By training systems to detect anomalies in current data based on patterns from past data, machine learning can help identify risks early, spot emerging trends, and streamline data management.

For example, previous years' data can be used to teach the system to recognise and reconcile similar issues in the current year or spot potential issues in present data based on historical expense analysis.

The speed at which the technology can work is also important, providing the confidence that every line item, not just the most material, has been considered with the same amount of rigour.

Predictive analytics can take this a step further by alerting tax functions to potential future challenges based on changes in data that have impacted tax previously. This could include identifying new jurisdictions, projects, or cost codes.

By proactively spotting risks, tax teams can focus their time on addressing new or unusual issues while the system handles the bulk of data processing consistently and accurately.

This approach can increase efficiency and confidence levels and be beneficial for tax authorities. By enhancing data review and reducing risks, tax teams can accomplish more in less time with heightened confidence in their processes. Overall, it's a win-win situation that benefits all stakeholders involved.

About the author

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