AI agents in procurement

What are AI agents in procurement?

AI agents in procurement refers to the inclusion of agentic AI technology in a business' procurement process. Agentic AI is an artificial intelligence system that can accomplish a specific goal with limited supervision. It consists of AI agents: machine learning models that mimic human decision-making to solve problems in real time.

Within a multi-agent system, each agent performs a specific subtask to reach the goal. These efforts are coordinated through AI orchestration and help procurement teams to automate workflows and streamline processes including vendor, contracts and order management value chains.

Not only are AI agents transforming the procurement lifecycle, they're also modernizing global supply chains end-to-end. The agents can offset the need for human oversight and can mitigate potential disruptions before they occur. AI agents are shaping the future of supply chain management and the procurement process, offering more operational efficiency and a competitive advantage.

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Why are AI agents in procurement important?

The procurement landscape is at a transitional point, moving far beyond simple automation processes. A recent IBM Institute for Business Value report[1] on generative AI in procurement highlights how organizations have already begun to embrace the gen AI revolution. Of the CSCOs and COOs surveyed, 64% say gen AI is already transforming their supply chain operations workflows.

At the forefront of the transition are AI agents, now considered the future of procurement and contract management. Procurement brings with it vast amounts of real-time data from within an organization, from suppliers or market insight databases. Organizations need to harness this data and act on it to achieve results in faster, better ways.

The traditional method of procurement automation has focused on digitizing paperwork as a way to cut down on routine tasks and also streamline workflows to help teams move more efficiently. They can also help manage supplier onboarding, automate contract compliance checks and purchase order processing.

Agentic AI is transforming procurement, harnessing the power of predictive analytics and leveraging machine learning (ML) and natural language processing (NLP). The yield is AI agents that think strategically, learn from experiences and act autonomously. AI agents are able to negotiate with suppliers, optimize cost savings and create strategic value as decision-making partners for human employees.
Demo

Take procurement to the next level with watsonx Orchestrate

Transform your procurement processes with automation and generative AI from the IBM industry-leading assistant technology, watsonx Orchestrate, enabling your procurement professionals to unlock their full potential and boost productivity.

How AI agents in procurement works

Autonomous AI agents, powered by large language models (LLMs), are designed to perform tasks that typically require human intelligence, including natural language, recognizing images and making decisions. They go beyond automating pre-existing business processes, instead working alongside humans while making their own memory engines and learning from mistakes.

The capabilities of AI agents are rooted in the large amounts of data that they ingest. They are able to interact with other data sources, import data and even other agents to further make informed decisions. Bots, powered by Robotic Process Automation (RPA), are an earlier form of AI that procurement teams use to automate repetitive tasks.

Within the world of procurement and supply chain operations, AI agents can handle a range of responsibilities including supplier management, pricing, purchase order history, supply chain management and market analysis. AI agents can shift orders to alternative suppliers, reducing downtime and bottlenecks within the supply chain.

AI agents can be implemented by using various programming languages and frameworks, such as Python, Java™ and TensorFlow. They can also be integrated with other procurement systems and technologies, such as databases, APIs, enterprise resource planning (ERP) systems, procurement platforms and supplier portals.

For example, IBM® watsonx Orchestrate® integrates with the top tools organizations use every day to accomplish common tasks such as supplier requisition creation, order line retrieval and contract management.

Benefits of AI agents in procurement

Manage supply chain volume

An organization's supply chain is complex and procurement teams have to manage hundreds and sometimes thousands of suppliers across the globe. There are multiple factors to consider as well, including geopolitics, trade policies, tariffs and supply chain disruptions that are out of the organization's control, like weather and market conditions.

Here is where AI agents can come in and offer a solution that can help human workers, especially in category management and inventory management, during a time of struggle.

If, for example, the weather is causing multiple delays on one supplier's route, an AI agent can reroute shipments or adjust sourcing strategies in real-time with data-driven insights. The agents make risk assessments quickly and act fast to be proactive and strategic, as opposed to being reactive.

Informed decision-making

Instead of procurement management reacting to a news report or basing decisions on historical data, procurement professionals can use AI agents to make real-time, informed decisions with greater insight for their customers. Agents can help mitigate supplier risk by autonomously monitoring market conditions, expense analysis, supplier performance and risk factors. When the digital worker detects something is wrong, it can automatically adjust and make procurement decisions fast and intuitively.

This benefit is essential to procurement and supply chain operations as moving quickly and acting strategically offers a competitive edge. An example of this type of decision-making is an AI agent that can do the data analysis of commodity prices and suggest an adjustment to procurement strategies faster than most human workers.

Enhanced supplier relationships

While it might seem like an AI agent would depersonalize supplier relationships, it can improve the partnership. The relationship an organization has with its suppliers is critical for all procurement functions. AI agents can manage routine tasks like onboarding, inventory management and expense management to help the human worker. It gives humans more time to focus on the organization-to-supplier human relationship.

In addition, AI agent technology can predict supplier needs and make strategic sourcing decisions through contract and inventory management. This enhanced management strategy can result in lower costs and more efficient workflows. They can also predict potential issues that might arise and mitigate them before escalation. Human procurement workers can be alleviated of the administrative tasks they want to avoid and instead do higher-value work.

Better risk management

One of the common advantages of AI agent technology is the proactive nature of the tool for the organization. A traditional risk management approach would be reactive to an issue, whereas AI agents use predictive analytics to anticipate a disruption. Furthermore, agents can also learn from the incident and recommend proactive measures to take so a similar issue doesn't arise.

This technology further benefits a business' bottom line and offers improved efficiencies across the entire organization with its autonomous and succinct capabilities.

Agents take external data—such as weather forecasts, factory closures, economic indicators, among others—and combine it with the organization's internal data sources. The purpose of this process is to

make informed decisions and identify potential issues that a human team alone might not detect. Procurement AI optimization requires the human and AI worker to work together to bring issues to the forefront and mitigate risks.

Use cases: AI agents in procurement and supply chains

1. Supplier selection and evaluation

AI agents can streamline the process of selecting suppliers by analyzing historical data, performance metrics, financial stability and market conditions. Agent technology can evaluate potential suppliers based on factors such as reliability, cost-effectiveness and compliance with contractual obligations, helping procurement teams choose the best fit for their needs. AI agents can also flag suppliers who might pose risks, such as geopolitical instability or financial instability.

2. Contract management

Selecting suppliers and contracting can be tedious for human procurement employees. With AI agents, procurement teams can manage contracts from suppliers and ensure they're all up to date and that all legal documentation is in order. The work relationships with suppliers are not just dependent on the human relationship, but also on the backend where things can get disorganized. Agents can automate contract reviews and identify potential risks with contracts before anything is finalized.

3. Purchase order automation

AI agents can automate the creation, approval and processing of purchase orders (POs), reducing manual effort and errors. When a requisition is submitted, the AI agent can automatically generate a PO, route it through the approval workflow and send it to suppliers. It can also verify the accuracy of order details against pre-established criteria, such as inventory levels or historical purchase patterns.

In addition, AI agents can create detailed expense analysis for an organization's spending patterns and help them identify areas of cost saving. Expense analysis is a key data point for an organization to help understand how it uses its money and enhance the value of the procurement operation.

4. Demand forecasting

Human procurement teams traditionally rely on historical data and market trends. This process helps to forecast demand for accurately managing inventory. With AI agents, the technology can predict future demand for products or materials. It can do that by using traditional methods coupled with seasonal trends and other external factors, like market conditions and global events.

This predictive capability enables businesses to manage inventory more efficiently, reduce stockouts and avoid overstocking. Ultimately, it improves the organization's cash flow and ensures that procurement decisions align with actual needs.

5. Compliance management

Organizations must abide by compliance standards, which require constant monitoring. AI agents can do the leg work on compliance monitoring by continuously tracking transactions and internal processes. AI agents can alert employees to potential compliance risks and provide a detailed analysis as to why the alert occurred.

In addition, the agents are constantly learning and adapting to new patterns for the specific organization it is serving. AI agents can tailor to the organization's specific regulatory environment and act as hyper-personalized compliance officers.

6. Inventory management

AI agents optimize supply chain inventory operations by monitoring stock levels, reallocating resources, reacting to fluctuations and streamlining adjustments across warehouses. They reduce carrying costs, ensure product availability and minimize manual updates—delivering smooth operations at optimum cost with less human intervention. In addition, AI agents can contribute to sustainability efforts. They can do that by reducing waste and stocking only for the precise needs of the business.

7. Order shipment readiness

AI agents improve supply chain order accuracy and speed by checking shipment status, updating customer orders and verifying stock availability. They reduce manual errors, enhance productivity for order support teams and improve customer satisfaction with timely, transparent updates.

Best practices for AI agents in procurement

Ensure data accuracy

Data quality is also key to the success of the AI agent in the procurement cycle. Organizations need to have their historical data and current data prepared before implementing AI agent technology. They need a data entry system in place that manages and sorts data constantly. With this system, the agents are constantly working with the most accurate and up-to-date data possible.

Create standards

Organizations should establish standards for AI agents to interact and operate. Creating standards ensures that the AI agent is following a consistent set of rules, processes and behaviors that provide predictability to the organization. Whether its handling supplier relations or processing data, standards offer reliability across many different contexts.

Ready employees

Introducing AI agent technology into an organization can significantly change how employees perform their tasks. Without proper preparation employees might feel overwhelmed or resistant to the technology, hindering its effective use.

Organizations need to balance the excitement of new technology with the understanding that employees will likely feel concerns about job security. It's important to address concerns and prepare employees through training—upskilling or reskilling—and clear communication.

Introduce AI agents gradually

New technology like AI agents shouldn't be implemented in one broad stroke. It should be introduced gradually, strategically, to allow for a more controlled and risk-managed integration. Organizations should deploy tests or pilot programs for specific procurement processes, with early use cases being the ones where AI agents could deliver immediate value. This process allows for businesses to identify potential issues or bugs early on and fine-tune AI systems.