A Practical Guide to Artificial Intelligence in Procurement

Procurement is making increasing use of a broad range of technologies that fall under the umbrella term "artificial intelligence" (AI). But the term is used rather loosely. How should we define it? Essentially, AI is "the capacity of a computer to perform operations analogous to learning and decision making in humans," Artificial intelligence enables machines to learn from experience, adjust to new inputs, and perform the kind of tasks that conventional computer-based software cannot do.

Thus "machine learning" (ML) technologies fall under the definition AI, as do "natural language processing" (NLP) technologies. In both cases, performance improves as a result of the input of new information, without additional human intervention in the software code. By contrast robotic process automation (RPA), though an advanced technology, is not "intelligent". RPA only performs repetitive, routine tasks. The repetition of tasks does not improve its performance; it can only be improved by human intervention, i.e., recoding the software.

In procurement, the main application areas for AI technology are in predictive and prescriptive analytics.

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Predictive analytics, based on machine learning, analyzes past events and current situations to predict what is likely to happen in the future. This is particularly valuable in contexts where situations are constantly changing.

Prescriptive analytics leverages AI to guide and advise procurement professionals on their future actions. It provides information and know-how that today is locked up in a few heads of procurement experts but, being based on data analytics, will do so in a more systematic way.

Here are a few practical examples of AI in use in procurement:

Supplier risk management: Risks are changing all the time, so it is difficult to base risk management on historic data alone. AI monitors risk positions in real time based on multiple factors and adjusts accordingly.

P2P: Algorithms monitor current price changes and direct purchasers to the best deal within a given set of constraints and thresholds in real time.

Fraud detection: AI is a game-changer in detecting fraudulent invoices and preventing procurement fraud and other forms of economic crime. Algorithms identify anomalies that have not arisen in the past, while reducing the number of false positives.

Spend analysis: Machine learning accelerates the classification of spend into standard taxonomies.

Strategic sourcing: Algorithms can help guide users to the ideal solution when they are not entirely sure what they are looking for or are open to exploring other alternatives. Each time the user makes a decision favoring one preference over another, the software uses that information to explore, find, and present new options.

Contract management: Natural language processing can be used to scan huge volumes of textual data for CLM, compliance, risk mitigation, smart contract authoring and other applications.

Myth Busters: AI Edition

So, what's the best way to proceed? Let's first bust a few common misconceptions about AI, because they will inevitably be raised in your organization.

Common Misconceptions and Myths

1. AI is just the application of algorithms – nothing new here.
2. AI learns from itself.
3. You need a heck of a lot of data for AI.
4. AI and ML are the same thing.
5. So in conclusion, AI takes away the need for humans to think!
6. AI can settle arguments between human beings because it is 100% objective.

The Reality

1. Traditionally, algorithms take some input and use mathematics and logic to produce the output. By contrast, an AI algorithm takes a combination of both inputs and outputs simultaneously in order to "learn" from them. There is a constant feedback loop.

2. AI is not "magic": it can't get better and better by itself. Generally speaking, ML systems have been trained on historical data, i.e., shown many past examples and have created a general understanding from them.

3. It is true that more data will give you better performance but beyond a certain point, the performance gains are marginal. Moreover, most AI applications are provided pre-trained, e.g., with anonymized data from existing users.

4. ML is a subset of AI. AI is technology that solves tasks that usually require human intelligence, based on rules. ML does this specifically by learning from data. NLP is a further subset of AI, this time focused on human linguistics, which makes it possible for a computer to "understand" text and even talk to humans. A further subset of ML is "deep learning", e.g., neural networks.

5. AI can certainly be trusted to take some low-level decisions that save time but ultimately the big decisions are left to human beings ... AI is there to guide and assist. Anything beyond that is in the realms of science fiction, because AI is still pretty useless when it comes to complex cognitive or creative tasks. That's why we prefer to talk about augmenting human intelligence, not replacing it.

6. Unfortunately, or fortunately, depending on your perspective, this is not always the case, for example, when deciding between Supplier A or Supplier B. For one thing, non-ML systems rely on rules written by human beings, and these may reflect a human bias. And second, ML systems rely on existing data, which may itself reflect the biases of past decisions. E.g., we will choose Supplier A because it fits the pattern of suppliers we chose in the past. Of course, these "faults" can be corrected and systems improved upon, but again, for the foreseeable future, we are talking about augmented intelligence, not perfection.

Ten Steps towards Implementation

Given all the possible variables, applications and scenarios it is not possible to give a definitive answer to the question "I think AI would be a big help, what should I do now?" But here are a few pointers to getting buy-in for an AI project in procurement.
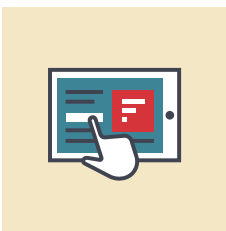
**1. Identify what matters most to stakeholders. For example, this could be**

◯ **For supply management:** Discover and correct data errors, assess and mitigate risks in the supply chain, identify a more diversified supplier base

◯ **For sourcing:** execute more effective advanced sourcing strategies in complex supply categories

◯ **P2P:** identify invoice fraud, kickback schemes etc., identify and correct errors

2. Frame the challenge and the outcomes in ways the stakeholders understand. E.g., your CFO cares less about manual errors than their potential immediate financial cost, whereas your CEO might care more about the potential damage to reputation.

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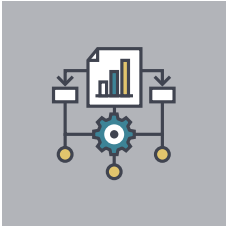
3. Quantify desired outcomes e.g., time and cost savings, risk elimination or mitigation, and identify soft benefits such as better management information and insight.

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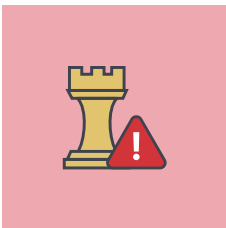
4. Communicate the danger of doing nothing. Sorry if that sounds negative, but the fact is your competitors (or some of them) are not standing still.

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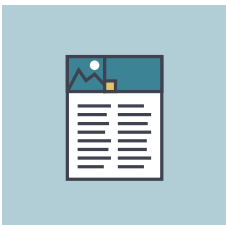
5. If your board is a little risk-averse, you don't have to be a first mover. Prove your case by showing them some case study material from other organizations.

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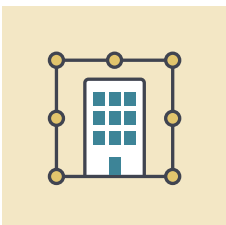
6. Choose the right implementation strategy. These are, for instance, build with existing in-house resources, recruit a dedicated project team, or find the right technology partner and rely on their proven software and support. Fully substantiate your choice of strategic approach.
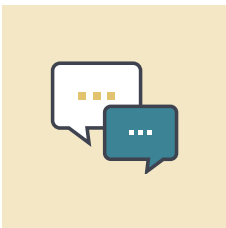
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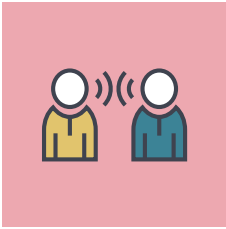
7. Fully brief the development/implementation team on requirements and objectives.

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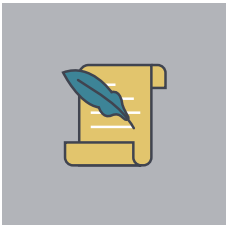
8. Draw up and agree an implementation plan with milestones that are realistic but "stretching".

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9. Communicate progress frequently throughout the implementation process to keep stakeholders involved and help them stay engaged.

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10. Measure immediate impact, impact after (say) six months, and again after a couple of years. Document fully, including lessons learned from the experience that will help frame expectations for the next AI project.

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Artificial intelligence can provide major advantages to your business. Want to learn more? Get in touch with JAGGAER today to see how we can help you with your digital roadmap!

Notes

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