The Future of Procurement Arrives at Last

Digital technologies are on pace to automate most routine procurement processes within three to five years. But digitization does more than cut costs through automation. It also unleashes new value sources and gives procurement a bigger strategic role.
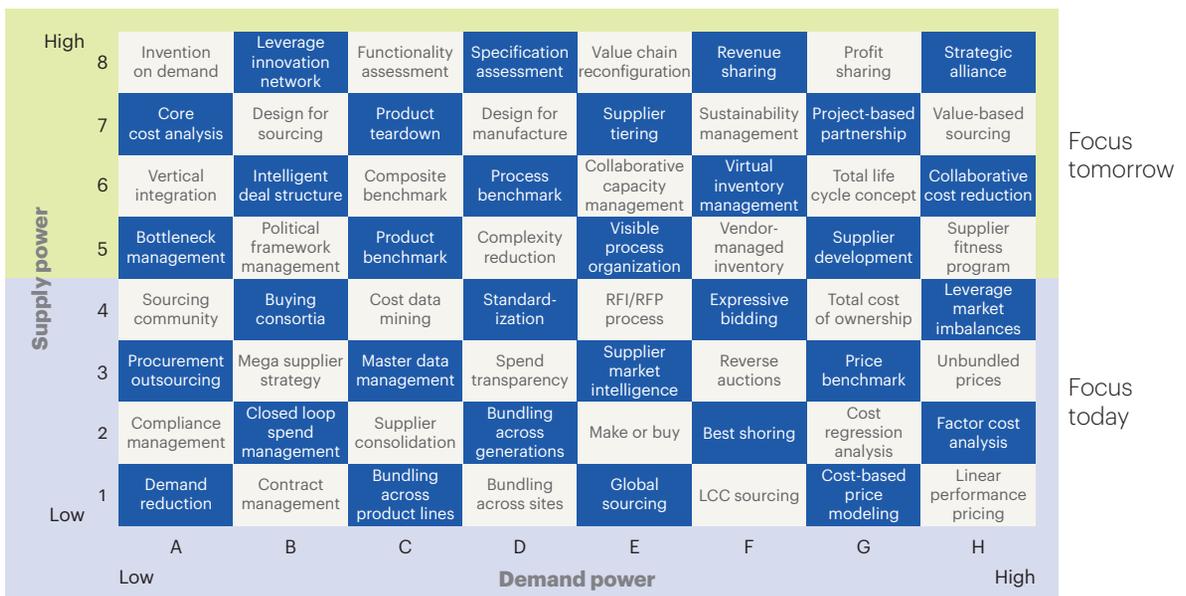
Procurement: Ripe for Reinvention

In many ways, today's procurement organizations resemble white-collar versions of manufacturing in the 1970s. Manual processes still dominate procurement, even as automation transforms other business functions. Legions of staffers handle low-value sourcing and demand-management activities at the bottom of The Purchasing Chessboard, where they have more leverage over suppliers or the ability to influence users (see figure 1). Routine, labor-intensive transactional activities—pricing negotiations, contract awards, supplier performance monitoring—consume time and attention. Procurement workers also spend hours piecing together fragmented information flows from myriad transactions, a task technology could perform in seconds. Internal stakeholders, meanwhile, grow frustrated by what they perceive as slow service from procurement, and yearn for self-service options and direct access to end-to-end data streams.

Figure 1

The focus of procurement today is on manual sourcing and demand management

The Purchasing Chessboard

		A	B	C	D	E	F	G	H	
High	8	Invention on demand	Leverage innovation network	Functionality assessment	Specification assessment	Value chain reconfiguration	Revenue sharing	Profit sharing	Strategic alliance	
	7	Core cost analysis	Design for sourcing	Product teardown	Design for manufacture	Supplier tiering	Sustainability management	Project-based partnership	Value-based sourcing	Focus tomorrow
	6	Vertical integration	Intelligent deal structure	Composite benchmark	Process benchmark	Collaborative capacity management	Virtual inventory management	Total life cycle concept	Collaborative cost reduction	
	5	Bottleneck management	Political framework management	Product benchmark	Complexity reduction	Visible process organization	Vendor-managed inventory	Supplier development	Supplier fitness program	
	4	Sourcing community	Buying consortia	Cost data mining	Standard-ization	RFI/RFP process	Expressive bidding	Total cost of ownership	Leverage market imbalances	
	3	Procurement outsourcing	Mega supplier strategy	Master data management	Spend transparency	Supplier market intelligence	Reverse auctions	Price benchmark	Unbundled prices	Focus today
	2	Compliance management	Closed loop spend management	Supplier consolidation	Bundling across generations	Make or buy	Best shoring	Cost regression analysis	Factor cost analysis	
Low	1	Demand reduction	Contract management	Bundling across product lines	Bundling across sites	Global sourcing	LCC sourcing	Cost-based price modeling	Linear performance pricing	
		Low				Demand power			High	

Supply power (vertical axis label, Low to High)

Source: A.T. Kearney analysis

All this is about to change. Digital technology will revolutionize procurement over the next three to five years (see figure 2 on page 2). A convergence of artificial intelligence (AI), advanced analytics, and other new technologies will automate manual processes and empower business users with the tools and information to get what they need without help from procurement.

Automation drives efficiency and creates new opportunities for procurement to add value in areas that can't be automated. Like production managers in a modern, digitized factory, procurement leaders will orchestrate end-to-end processes, with a strategic perspective and an eye on long-term value. As technology takes over routine transactional work, they'll focus on higher-value activities such as forming vendor partnerships and re-engineering products.

Figure 2
Digital will drive process automation and end-to-end information transparency
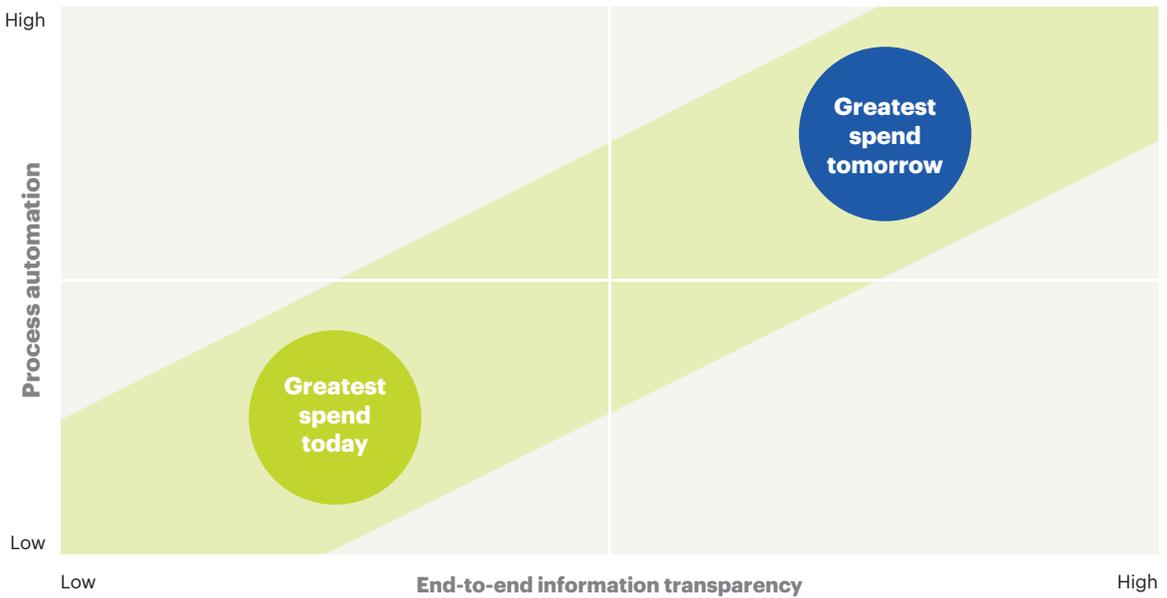
Source: A.T. Kearney analysis

The future of procurement looks familiar in some ways and strikingly different in others. Procurement will always meet basic user needs for transactional services such as sourcing and supplier selection. But digitally enabled procurement teams also will play a bigger role in advancing company strategy by improving products and services and turning supplier capabilities into competitive advantage in the marketplace.

Procurement Technology Comes of Age

It may be tempting to dismiss AI and other recent advances as just another wave of hyped technologies that won't fundamentally change procurement. After all, procurement has barely been touched by the tools SAP, IBM, and other software vendors have been rolling out for nearly 20 years. Today, few procurement processes are fully automated, and end-to-end information transparency is limited in most categories. True, large global manufacturers have automated replenishment and other direct spending categories. But manual processes persist for indirect expenditures, and many companies haven't automated all direct categories.

Blame sluggish innovation by traditional software vendors or resistance to new technologies by procurement stakeholders—or both—but lagging technology adoption is holding the function back. Procurement organizations often can't identify their entire spend, complete catalog systems, or fully utilize sourcing software. Chief procurement officers are left to hope major vendors will someday offer a user-friendly technology that achieves critical-mass adoption.

That technological tipping point is here. AI, blockchain, and the Internet of Things (IoT) transform how users interact with technology. And they're converging to form fully autonomous procurement tools that will run the entire procure-to-pay process, including

Amazon Digitizes Procurement

Online retail giant Amazon is bringing its disruptive act to procurement with a business-to-business website modeled on Amazon.com. Amazon Business Services (ABS) offers differentiated pricing based on Amazon's algorithms, its industry-leading fulfillment capability, data transparency, and a familiar user-friendly buying experience. ABS's website has a wide selection of products, but also allows customers to purchase items from external vendors. It's well positioned to pick off tail spend for most indirect categories and likely will expand into services eventually. ABS shows the potential of technology to automate many functions traditionally handled by people in procurement organizations. Its autonomous systems find the items most relevant to user searches and identify "good/better/best" options for customers. These technological capabilities eliminate the need for staffing in areas such as catalog management, supplier cultivation, and data transparency.

contract generation.[1] Amazon is building a system that will automatically solicit bids, evaluate responses, and award business (see sidebar: Amazon Digitizes Procurement). Data input and classification will become much more accurate when intelligent systems start executing transactions independently; some companies already use AI to classify spend. Even more impressive is the potential of AI and blockchain to track contract compliance in real time, a feat nearly impossible for today's archaic systems.[2]

Implications for procurement organizations are profound. For a glimpse of the future, consider technology's impact on corporate IT departments over the past 20 years. Automation didn't disrupt IT overnight but encroached slowly and subtly. Back in 2000, data centers were staffed by well-paid systems administrators with advanced technical skills who kept IT networks running smoothly. It was hands-on work overseeing fleets of on-site servers that were manually racked and locally managed. Most companies employed one systems administrator for every 10 servers. Ten years later the ratio had dropped to one systems administrator for every 100 servers, as virtualization and cloud computing transformed IT infrastructure. Humans were still involved, but automated systems made basic tasks such as deploying new servers and responding to problems as simple as point and click. Today's IT systems are largely self-managing, self-diagnosing, and self-repairing. Artificial intelligence tracks usage, decides when to add more capacity, deploys new servers, spots trouble, and fixes broken machines—all without human intervention. Today's ratio of systems administrators to servers? One to 35,000. The few remaining systems administrators keep tabs on automated systems that do the work they used to do. In less than two decades, technological progress has all but eliminated a lucrative, high-skill career.

Procurement is moving down the same path. Automation and information transparency continue to expand, especially in categories where companies have the economic leverage to force vendors to adopt new technologies. The future looks bleak for procurement workers who handle the low-value work of basic negotiations, writing statements of work, and churning out reports. Software will take over these tasks and empower users with the information they need to make their own decisions in real time.

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[1] AI is making huge strides in the legal industry with bots replacing the work paralegals and entry-level attorneys used to do. So, drafting and managing procurement contracts will be a natural extension.

[2] A "smart" contract is a computer protocol intended to facilitate, verify, or enforce performance of a contract.

As employment levels shrink, talent requirements will shift, favoring people who know how to solve problems and work effectively across functional boundaries. Procurement's focus will turn to categories where suppliers have more leverage, increasing demand for skills such as rethinking specifications and managing negotiations and alliances. The Purchasing Chessboard and other strategic frameworks for category sourcing will be more pertinent than ever, as procurement steps up efforts to shape supplier behavior.

Automation Is a Tool, Not a Goal

Far-sighted procurement organizations see a not-so-distant future when today's cutting-edge automated procurement platforms have become standard features of commercial ERP packages available to all. Enterprise software vendors are already adding AI, blockchain, and IoT to their menus. SAP recently announced plans to embed blockchain into its new product line and joined forces with IBM to use Watson for procurement.[3] Microsoft and Accenture are using blockchain to build a personal digital identity system for the United Nations.[4]

> Organizations will create sustainable advantage by harnessing technology to generate value.

Widespread availability of intelligent systems means automation alone won't create competitive advantage. These technologies aren't an end in themselves, but important strategic tools for procurement organizations. Winning organizations will create sustainable advantage by harnessing technology to generate differentiated value with better processes that advance their company's strategy.

An example from the banking industry illustrates the business opportunities and challenges arising from automation. Multinational banks have globe-spanning networks of automated teller machines (ATMs), each requiring regular maintenance, cash replenishment, and occasional one-off service calls. Typically, banks employ procurement staff in each region to negotiate and manage contracts with local ATM service providers and supervise their performance.

In the short term, AI can improve these procurement activities by expediting the collection of information needed to create smarter statements of work and enhance contract compliance. Over the long term, banks can reap even greater benefits as technology teaches ATMs to not only monitor themselves, but actually source their maintenance services. Smart ATMs could individually determine when they need service, solicit bids, and award contracts to service providers. With machine learning, they can evaluate supplier performance and make better contracting decisions based on actual experience with various vendors. Automating these processes reduces labor costs by eliminating the need for local procurement workers, while helping to prevent fraud and ensuring 100 percent contract compliance.

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[3] "SAP unveils blockchain service in the cloud," 17 May 2017

[4] "Accenture, Microsoft team up on blockchain-based digital ID network"

Organizationally, large procurement groups scattered around the country or even the world could be pared back and centralized. A smaller number of remaining staffers would oversee autonomous end-to-end processes, such as "machine minders" in robotic automobile factories.

At the same time, automation poses network design and logistical challenges that require innovative thinking (see sidebar: Keep an Eye on AI). Procurement officials will have to figure out how to tap scale economies and head off inefficiencies in a network of autonomous machines operating independently. For example, they'll want ATMs to combine their purchasing power to get better pricing wherever possible. And they'll want the machines to coordinate service schedules to make sure a shared vendor doesn't make multiple back-and-forth trips to ATMs in the same area.

The New Procurement Organization

Many world-class procurement organizations are pursuing process automation and end-to-end information transparency. These organizations get the most from new technologies by focusing on three key activities relevant to all procurement categories and processes:

1. **Overall process orchestration.** Procurement leaders ensure that the automated source-to-pay process is fit for purpose and meeting the needs of users without unintended side effects. They also make sure everyone has full access to information and uses it properly.

2. **Strategic category management.** Technological change doesn't eliminate the fundamental importance of supply and demand power in managing external spend across categories. Procurement professionals can still add value through the effective use of tools such as The Purchasing Chessboard.

3. **Supplier relationship management.** Automated systems take over the mechanics of creating scorecards and monitoring performance. But humans keep control of higher-order activities such as shaping supplier behavior, leveraging competitive advantages, and cultivating winning ecosystems. The procurement function of the future will double down on these objectives, seeking opportunities to disrupt existing purchasing relationships in all categories without letting new suppliers get too powerful.

Keep an Eye on AI

For all their potential, autonomous systems shouldn't be left to their own devices. Thinking machines need human oversight to avoid disaster. In 2011, a CIA drone operating over the Iran–Afghanistan border lost contact with its base and defaulted to autonomous onboard systems programmed to send it to the closest landing strip. Unfortunately, the nearest one happened to be an Iranian airbase. Iran received an unintended gift from the US representing billions of dollars' worth of stealth and surveillance technology. A few years later, Iran's military unveiled a "new" drone that looked remarkably like the American model. If only the US programmers had taught the drone to distinguish between Iranian and American airfields.

The episode underscores the important role of humans in designing processes and monitoring automated systems. Businesses deploying AI in procurement face the same type of risk that befell the CIA. For example, an AI bot soliciting bids from suppliers might unknowingly provide confidential specifications or intellectual capital to a competitor. Implausible? Not in a world where many large enterprises double as suppliers and competitors.

Success in these three areas demands skills in short supply at most procurement organizations. A premium will accrue to procurement professionals who exhibit an analytical mindset, fully embrace digital technologies, thrive on problem-solving, excel in design thinking, and understand essential sources of value. Automated environments call for a mix of "analytical" and "creative" thinking modes as roles evolve. Even as machines take over heavy computational work, designing factory-style processes will require linear reasoning skills associated with "left-brain" thinkers. Similarly, "right-brain" thinkers will exchange routine relationship management and communications tasks for new roles requiring the creativity to envision new possibilities for intelligent systems.

> Leading procurement organizations take the initiative in shaping new technologies to their needs rather than waiting for generic, off-the-shelf solutions from commercial software vendors.

Next-generation procurement also rewards agility, experimentation, risk tolerance in select areas, and a willingness to accept occasional failure as a learning experience—provided it doesn't impair business-critical activities. Leading procurement organizations take the initiative in shaping new technologies to their needs, rather than waiting for generic, off-the-shelf solutions from commercial software vendors. They collaborate with a wide range of vendors—including start-ups—to tailor automated systems to their unique requirements. Procurement is well qualified to orchestrate these efforts, thanks to the function's traditional role as intermediary between internal stakeholders and outside vendors. Melding this longstanding expertise with the new skills described above will elevate the influence and impact of procurement across the enterprise.

No Time to Wait and See

Moore's Law notwithstanding, there's little correlation between the pace of technological change and business adoption of new technologies. Some companies quickly embrace every bleeding-edge innovation, while others wait years before upgrading their desktop computers to the next version of Windows. This spotty track record, coupled with memories of ballyhooed technologies that haven't lived up to the hype—collaboration software, peer-to-peer networks, and RFID come to mind—make some doubt the prospects of AI and other autonomous systems in procurement. Although healthy skepticism toward any new technology is understandable, procurement organizations that underestimate these technologies risk falling behind.

The future of procurement is coming on quickly. At the current rate of adoption, 60 to 70 percent of existing processes at leading procurement organizations could be automated within three years. Why? Unlike many enterprise technologies, automation yields immediate tangible benefits in the form of cost savings, efficiency gains, workforce rationalization, and service improvement. No company can afford to sit back and watch competitors reap these benefits.

But adoption is only a tactical first step. Successful companies do more than simply automate existing processes. They reshape their operations around the new technology, tapping new sources of value and advancing broader strategic goals. In procurement, automation enables new approaches to traditional processes from strategic category management to supplier relationship management. In the short term, procurement organizations can drive value by condensing and streamlining processes to fully capitalize on automation efficiencies. They can generate greater returns over the longer term by identifying and shifting resources to higher-value activities made possible by the same technology taking over lower-value transactional routines. Every procurement organization will take up these challenges at its own pace, but delay isn't an option. Those that start now will give themselves a better chance to capture the full potential of digitization, becoming hubs of innovation, wellsprings of value, and orchestrators of success.

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