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Bots, algorithms, and the future of the finance function

Automation and artificial intelligence are poised to reshape the finance function. Knowing what to automate and managing the disruption can lead to a new era of productivity and performance.

Frank Plaschke, Ishaan Seth, and Rob Whiteman

For years, a global pharmaceutical company had outsourced its procure-to-pay finance activities, such as processing invoices and paying suppliers. Savings from low-cost labor and improved processes had yielded savings, but managers were eager to explore whether automation could unlock new opportunities. After assessing for themselves how much work could be automatable, estimating the value at stake, and calculating the investment required, they challenged the company's offshore business-process outsourcer (BPO) to show that it could compete with an automated model. In the end, the pharmaco managers decided not to bring the outsourced elements home to automate. But they did renegotiate the company's BPO contract, saving 40 percent or more over the next three years.

Offshoring, outsourcing, and centralization have been the bread and butter of improving the finance function's productivity for decades. As the pharmaco's experience shows, tech-savvy CFOs are now considering automation to propel a new wave of efficiency and performance. By our assessment, the economics of automating many finance activities are already compelling—a resounding success in some areas, even if performance is mixed in others. Today's cheaper, better, and faster technology seems destined to reshape the finance function—and without the multi-year headaches that many CFOs associate with early enterprise-resource-planning installations.

As in other business settings where automation has become increasingly viable, its implications in

finance look to be disruptive for companies and outsourcers alike. The trend raises issues that executives must consider as they adopt a more automated finance operating model, whether internally or through outsourcing. For starters, automating the finance function may be enticing conceptually, but benefits can be elusive. CFOs will need a clearer understanding of what kinds of activities can be automated. To take full advantage of the opportunity, they'll also need to rethink processes

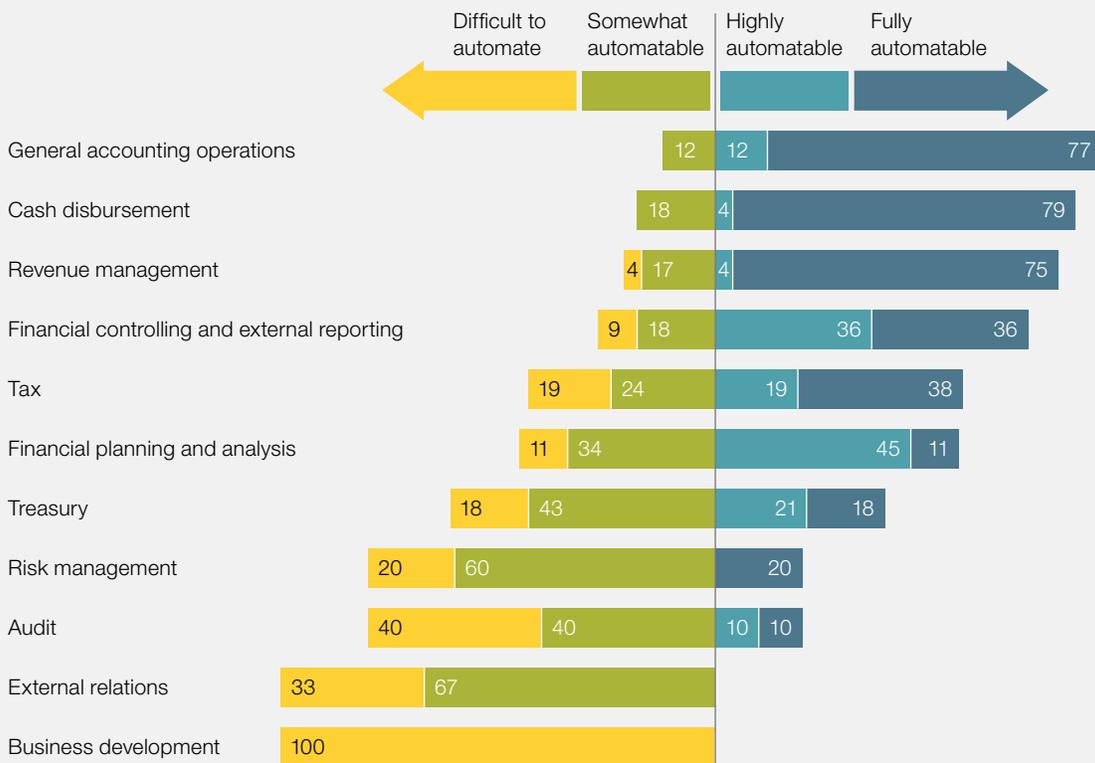
and organizations around the technology in a fundamental way. And they will need to manage the disruption to get through the effort without breaking an already stretched function.

Understand what can be automated

Finance organizations perform a wide range of activities, from collecting basic data to making complex decisions and counseling business leaders. As a result, the potential for improving perfor-

Exhibit 1 Transactional activities are the most automatable, but opportunities exist across most subfunctions.

Activities that can be automated using demonstrated technologies, %¹



¹ Proportion of tasks. May not add to 100% due to rounding.

Source: McKinsey analysis

Exhibit 2 Many activities in the finance function can be automated.

Accounting <ul style="list-style-type: none">• Automating complex journal entries• Performing and documenting account reconciliations• Calculating and applying allocations• Maintaining fixed-asset accounts	Accounts payable <ul style="list-style-type: none">• Entering nonelectronic-data-interchange invoices• Performing 2- and/or 3-way invoice matches• Processing expense-approval requests• Completing audits (eg, duplicate supplier payments)	Accounts receivable <ul style="list-style-type: none">• Generating and validating invoices• Applying cash to outstanding balances• Analyzing and processing disputes• Creating reports (eg, accounts-receivable aging, credit holds)
Financial planning and analysis <ul style="list-style-type: none">• Building standard management reports• Consolidating and validating budget and forecast inputs• Gathering and cleaning data for analysis	Payroll <ul style="list-style-type: none">• Flagging time-sheet errors and omissions• Auditing reported hours against schedule• Calculating deductions• Harmonizing data across multiple timekeeping systems	Other <ul style="list-style-type: none">• Preparing external-reporting templates• Conducting transaction audits of high-risk areas• Preparing wire-transfer requests

Source: McKinsey analysis

mance through automation varies across sub-functions and requires a portfolio of technologies to unlock the full opportunity. Applying the same methodology outlined in the McKinsey Global Institute’s automation research, we found that currently demonstrated technologies can fully automate 42 percent of finance activities and mostly automate a further 19 percent (Exhibit 1).

About a third of the opportunity in finance can be captured using basic task-automation technologies such as robotic process automation (RPA). Working atop existing IT systems, RPA is a class of general-purpose software often referred to as “software robotics”—not to be confused with physical robots. RPA and complementary technologies, like business-process management

and optical character-recognition tools, have been applied successfully across a number of activities in finance (Exhibit 2).

Many of the technologies that enable basic task automation, including robotic process automation, have been around for some time—but they’ve been getting better, faster, and cheaper over the past decade. Moreover, many automation platforms and providers were start-ups a decade ago, when they struggled to survive the scrutiny of IT security reviews. Today, they’re well established, with the infrastructure, security, and governance to support enterprise programs. Today’s task-automation tools are also easier to deploy and use than first generation technologies. Where a manager once had to wait for

an overtasked IT team to configure a bot, today a finance person can often be trained to develop much of the RPA workflow. Today, we estimate that it makes sense from a cost/benefit perspective to automate about half of the work that can be technically automated using RPA and related task-automation technologies.

Capturing the remainder of the opportunity requires advanced cognitive-automation technologies, like machine-learning algorithms and natural-language tools. Although they are still in their infancy, that doesn't mean finance leaders should wait for them to mature fully. The growth in structured data fueled by ERP systems, combined with the declining cost of computing power, is unlocking new opportunities every day.

One tech company, for example, developed an algorithm that monitors internal and external data to audit expense reports. The algorithm cross-checks them against travel data and personnel data—since travel needs vary by role and rank—to highlight potentially fraudulent activity. In this case, the company uses the output to identify areas where policies may be unclear, not for enforcement. A similar effort enabled the company to audit vacation time continuously: an algorithm compared declared vacation days with data from badge swipes and computer-usage data to confirm whether employees were reporting vacation time accurately. Cases like these represent the beginning, not the end, of what's possible with cognitive-automation technologies.

Rethink people and processes around the technology

Today, processes in the finance function are purposefully designed to harness the collective brain power and knowledge of many people. The temptation for managers as they implement an automation program is to follow that same pattern, retrofitting a particular automation tool

into the existing process. Moreover, managers often see automation as a technology initiative that can be led by the IT department. As a result, companies end up with a patchwork of incongruous technology tools that automate separate and distinct parts of the process. This approach is fine for capturing the first 5 percent or so of automation's impact. But unlocking the full potential requires a fundamentally different way of thinking.

To capture that potential, managers must be willing to reengineer their processes completely. At one global financial company, for example, they systematically went through each part of the record-to-report process, redesigning the activities and organizational structures around a portfolio of technologies. These managers used task-automation technologies like robotic process automation for purposes such as preparing journal entries, as well as cognitive-automation technologies like machine learning to reconcile differences between disparate accounting records. Although they haven't yet begun deploying natural language tools to produce report commentary,¹ they have not only proved that these technologies work but also designed their processes to adopt them down the road. The result was a road map that these managers expect to unlock 35 percent savings from automation over the next two years.

At a heavy-equipment producer, managers had long used spreadsheets to forecast monthly sales and production. Frustrated with the time consumed and the imprecision of manual forecasts, they tasked a team of four data scientists with developing an algorithm that would automate the entire process. Their initial algorithm used all the original sales and operations data, as well as additional external information (about weather and commodities, for example). In this case, within six months the company eliminated most of the manual work required for planning and forecasting—with the added benefit that the

algorithm was better at predicting market changes and business-cycle shifts.

Manage the disruption

In theory, finance has many opportunities to redeploy its people. Financial-planning and -analysis professionals could be retasked to support the business. Tax specialists could be refocused to maximize after-tax income.

But, especially in transactional functions, the hard reality is that automation—if implemented effectively—will inevitably lead to changes in organizational structures, redefined roles, and layoffs. At one global financial institution, the CFO is on pace to release a quarter of the company’s 20,000-person shared-services organization over the next 24 months. That’s bound to be disruptive, and there’s no point in pretending these realities don’t exist or trying to hide an automation program behind closed doors.

The leadership and vision of the CFO, in particular, are paramount, just as with any finance transformation. In our experience, the best approach is to manage automation systematically along these lines:

- **Start with the more mundane, transactional tasks, which inherently have higher turnover.** Rather than releasing a lot of people, in many cases you just

don’t fill existing roles as people leave. Also, such roles usually don’t require a major organizational redesign to capture automation’s benefits. A team that currently requires 20 people could simply reduce its head count to ten by using a fully or partially-automated solution. Going after basic tasks first allows the remaining employees to focus on the more professionally rewarding tasks, and early wins create the capacity and funding that help the finance function to fund other parts of the automation journey by itself.

One institution started by rolling out some 200 bots to automate work at its offshore shared-service centers. That allowed the company to develop a playbook, a governance model, and a workforce-management strategy that could be deployed elsewhere. It also created the foundation needed to consider automating more complex, higher-order processes, such as financial modeling and audit.

- **Create a human-resources and placement capability that works in lockstep with the CFO and the finance function.** Automating more complex activities, such as a company’s controllership and tax functions, often means releasing people, since these have less turnover than more transactional work. For many companies, redeploying people has proved a challenge. Most just take the savings or, worse, incur new automation costs

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without a corresponding reduction in labor spending. Thoughtful workforce planning is critical.

Communicating a plan for the affected workers well before automation tools are introduced can help. The necessary steps include designing the future organizational structures, telling people exactly what you'll do to evaluate them fairly, and promising to do your utmost to create opportunities for redeploying personnel. Maintaining a constant lineup of open positions in finance and other parts of the company can further minimize the impact on people. Honesty and transparency are critical.

One North American bank, for example, explicitly mapped the automation solutions it was using to the approximately 200 finance employees affected. Before the organization introduced the technology, it had a plan to redeploy employees in more valuable roles. To date, the company has found ways to redeploy nearly 50 of them to other areas within and outside the finance function.

- **Adapt the recruiting and retention profile to get the finance professionals you need.** Even if technology intimidates some employees, a willingness—and ability—to learn new tools is important. Future leaders will be quite excited by a function on the leading edge of digitization and automation. And even CFOs of companies that aren't planning an automation program in the next year or two should seek out and recruit people who will be prepared for it when it happens.

One technology company undertook such an effort by creating an internship program to attract machine-learning talent to the finance function. The company maintains data sets that can be

used to automate activities ranging from financial forecasting to internal audit. Each year, two or three students from a local university spend the summer building algorithms and bots. Not all of these efforts succeed, but the company has begun implementing at least half a dozen solutions developed by the interns. Similar programs will be critical to attracting talent that can lead an increasingly automated finance function.



Automation is already reshaping the future of work in the finance function, and the opportunity to boost performance will fuel the trend. Adapting to disruption is challenging, but CFOs who build a clear early perspective on the nuances of the automation journey will be well positioned to thrive. ■

¹ As opposed to commentary written by people.

Frank Plaschke (Frank_Plaschke@McKinsey.com) is a partner in McKinsey's Munich office, **Ishaan Seth** (Ishaan_Seth@McKinsey.com) is a senior partner in the New York office, and **Rob Whiteman** (Rob_Whiteman@McKinsey.com) is a partner in the Chicago office.

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