ADVANCED ANALYTICS AND THE CFO
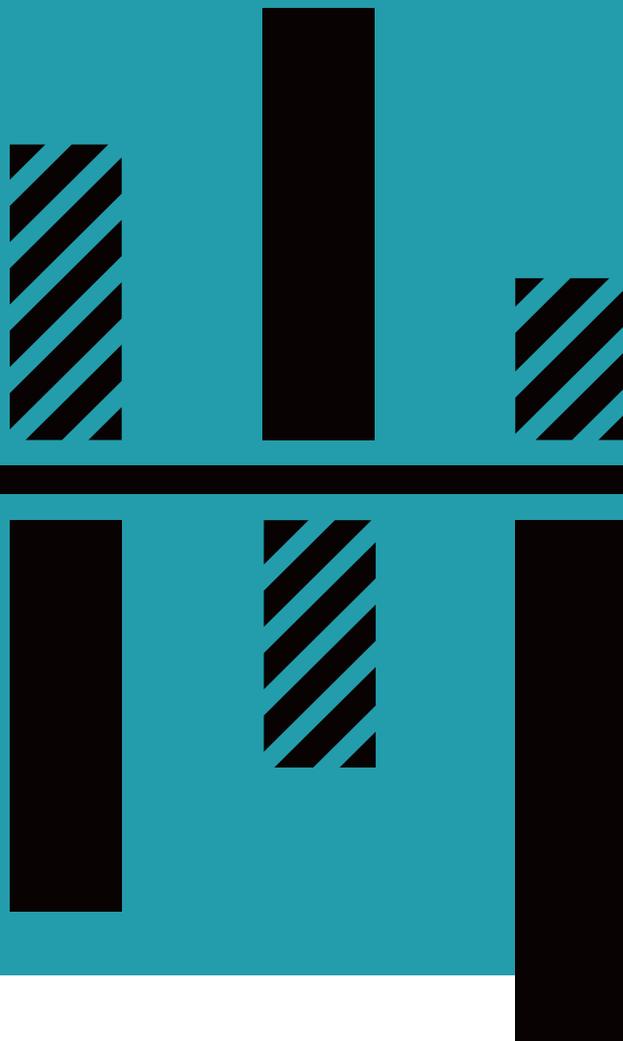
The CFO Agenda: How to Capitalize on Extreme Automation

Spurred by technology advances, the speed of disruption in organizations is perpetually fast—and only getting faster. One out of three CEOs today believes his or her sector will see a major disruption in the coming three years as a result of technological innovation.[1]

With a clear line of sight to the impact of disruption on both the business model and operating model, the CFO has the chance to turn extreme automation into opportunities for competitive advantage and growth. Benefitting from this disruption, however, depends upon the CFO's taking action now on the following three strategic priorities:

Reexamine the technology infrastructure. In recent years, CFOs have turned to cloud ERP systems to streamline processes and robotic process automation (RPA) to further drive operational efficiency. While many organizations will continue to see the value in these areas, the next several years will be marked by investments in more advanced technologies. Machine learning and artificial intelligence (AI) will shift the focus from operational efficiency to enhanced data and insights, which can deliver a quantum leap in performance. CFOs need to ensure they have baseline digital capabilities—specifically around data and processes—to capitalize on these future investments.

These technologies enable trends and patterns to be analyzed for future action rather than historical explanations. IBM Watson, for example, can quickly analyze and synthesize tremendous amounts of data and then draw hypotheses that drive value creation. Instead of asking what happened, predictive technologies like this can ask what will happen. AI can go a step further and ask what we should do about it.

Create business partnerships. Finance must partner with the business in deeper and more impactful ways, becoming a model for collaboration, cutting across functional areas, and upending silos to unleash value.

Business partnering requires not only the ability to provide analysis and insight but also the ability to challenge the business, to be credible, and to be recognized as a valued partner. While there is no one-size-fits-all business partnering model, there is one element that all hold in common: a customer-centric approach to internal customers that helps drive real value for the business and boosts the bottom line.

Develop new skills and talent. In a rapidly changing environment, finance must assess new work to be done and how this translates to workforce skill sets. There will be an increased demand for talent specializing in analytics tools, methods, and technology. Critical thinking skills will also be needed to ask insightful questions, interpret data, and draw conclusions rather than simply provide answers. As RPA increasingly captures routine finance work, the human element becomes even more important for performing strategic activities.

Attracting, building, and retaining talent will look different in the future. It will be essential to address critical aspects of talent management holistically—from sourcing nontraditional backgrounds, to redefining roles and core competencies, to rotating finance high performers and future leaders throughout the business.

As the following article makes clear, CFOs must disrupt the finance function to stay ahead of extreme automation. Otherwise they risk irrelevance.

[1] KPMG LLP, *Disrupt and Grow: U.S. CEO Outlook 2017*.

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ADVANCED ANALYTICS AND THE CFO

IN BRIEF

As CFOs and their teams rode the last major wave of enterprise technology advancement—widespread adoption of ERP and other core financial systems, along with advances in database and communications technology—they gained new enterprise influence. No longer simply a steward of historical reporting and compliance, finance is a key business partner and a steward of enterprise performance.

Today, a renewed wave of digital transformation, including advanced analytics fueled by artificial intelligence and machine learning, is breaking over the corporate finance function. These technologies are transforming customer expectations, fueling disruptive new business models, and revolutionizing the processes that form the foundation of enterprise performance management. This demands that CFOs align investment in advanced analytics with business strategy by working to understand how these changes are likely to affect their organizations; forming plans to respond; and establishing disciplined, rigorous frameworks to align investment in advanced analytics to those plans and to measure their effectiveness.

As the pace of business increases, the speed of change accelerates, and finance teams face growing pressure to deliver even greater value to the business, the question CFOs now face is how the finance function should engage with these new technologies to work with business partners and manage enterprise performance. This research, based on a series of interviews with analytics experts and senior finance executives, shows that recent developments in data and analytics present a clear call to action to finance leaders to define the analytics agenda for the finance function. Why? Because finance occupies a unique position within the company, as defined by the following five characteristics:

- Broad organizational scope

- Affinity for fact-based decision making

- Objective and credible

- History of information stewardship

- Serves as the focal point of enterprise performance management

How can CFOs and other finance leaders begin to answer that call? Although every organization must define its own analytics agenda with its own set of complex business considerations, our research shows that finance leaders may benefit from focusing on five key areas where finance participation, guidance, and leadership can make a difference:

EXTREME AUTOMATION DEMANDS THAT CFOS ACT—OR RISK THE RELEVANCE OF THE FINANCE FUNCTION. WHAT SHOULD THEY CONSIDER AS THEY MOVE FORWARD?

To maintain its status as a **critical resource** amid the current wave of analytics-fueled disruption, the finance function will need to embrace a new set of **powerful and challenging technologies**.

- Shaping—and championing—the enterprise's strategic data and analytics vision

- Supporting technology investment to improve data quality and access to analytics

- Developing new skill sets and new talent

- Finding the right business partnering and service delivery models to support the analytics paradigm

- Managing change

Our research also lead to a leadership framework with three potential levels of CFO engagement with data and analytics. This framework encompasses perspectives from both the enterprise and the finance function.

Enterprise Perspective

Enterprise-level leader. Leads effort to formulate, communicate, and execute the enterprise-wide data and analytics strategy.

Primary adviser. Serves as key adviser and domain expert in analytics initiatives.

Secondary adviser. On request, provides ad hoc advice to other business and functional areas as they explore analytics adoption.

Finance Function Perspective

Innovator. Deploys data and analytics not just to inform but also to innovate on the core finance operating model and performance management processes.

Power user. Integrates data and analytics into key processes to drive improvement.

Evaluator. Oversees adoption of new data and analytics tools and systems.

By embracing the last dramatic leap forward in enterprise technology, CFOs and those in the broader finance function established themselves as decision makers' go-to resource for insightful analysis of every conceivable type of business issue. This included issues ranging from multiyear-horizon enterprise strategy to forward-looking revenue forecasts, tactical resource-allocation questions, and everything in between.

To maintain its status as a critical resource amid the current wave of analytics-fueled disruption, the finance function will need to embrace a new set of powerful and challenging technologies. It also will need to remake its very conception of the issues, questions, and requirements that technology can address.

Emerging Technologies and the Finance Mandate

What will advanced data and analytics mean for finance?

Until recently, the notion that complex organizations must be supported by complex and inflexible technology systems was taken almost as a given. But as R. "Ray" Wang, principal analyst and founder of Constellation Research, says, technology change is now challenging those assumptions. "Systems can be integrated today in ways that weren't previously possible," he says. "Today, integration capabilities are good, cloud capabilities are good, our ability to orchestrate systems is good, and computing power is excellent. And that is what makes this work."

These core technology advances, in addition to advances in artificial intelligence and cognitive systems, are enabling more and more processes—including some accounting, compliance, and reporting processes—to be reliably automated. From a finance leader's perspective, the value of this trend is obvious: More critical processes can be executed more consistently and more reliably than ever, reducing both cost and risk.

Companies must embark on this process- and systems-improvement journey in order to lay the necessary foundation for advanced analytics, according to Wang. Standardizing data definitions; integrating and rationalizing core financial systems; and leveraging the cloud for scalability, standardization, and coordination among systems are key first steps in that journey.

Improving systems integration and standardization, in turn, can support increasingly sophisticated degrees of automation. As finance organizations achieve higher levels of automation by drawing on robotic process automation and other technologies, they can build the IT infrastructure foundation for advanced analytics projects and also free resources and funding to support those projects.

As transaction processing, financial reporting, and compliance become increasingly automated, however, CFOs and their teams will also be increasingly challenged to work in new ways. "If you have a routine job, computers will be doing it," says George Westerman, principal research scientist with the MIT Sloan Initiative on the Digital Economy. "That means that today's finance leaders must devote their attention to the nonroutine, strategic work that their people can do, supported by computers that do the routine work."

From an enterprise perspective, CFOs have a leading role to play in aligning investment in advanced analytics with business strategy by working to understand how technology-driven disruption may impact their organizations; forming strategic, operational, and financial plans to respond; and establishing disciplined, rigorous frameworks to align investment in advanced analytics to those plans, and to measure and manage their effectiveness. From a functional perspective, finance's ability to continue to increase its value contribution will depend on its ability to make use of advanced analytics to surface patterns that may have a substantial impact on business performance, improve forward-looking forecasts and optimize their companies' responses to them, and answer new kinds of questions and test imaginative new scenarios.

In practice, predictive analytics systems can help finance teams identify the potential for performance shortfalls and engage business partners to take efficient, targeted actions to remedy them well before they impact financial statements. At one manufacturer, for example, analytics are able not just to predict shortfalls in receivables performance (as measured by Days Sales Outstanding metrics) but also to pinpoint specific accounts to target for collections based on a range of factors geared toward the optimal outcome—bringing financial performance up to par.

Rather than relying on conventional methods to prioritize accounts for collection, such as days past due or the size of the account, the company is now able to prioritize collections based on a range of factors that signal likelihood to pay within a given time frame. The system allows senior management team members to drill down on targeted accounts to identify the sales representatives associated with them, and it provides an automated system to notify reps by email that their help with collections may be required. By using analytics to refine their collections targeting, the company has not only been able to improve its DSO performance but also to minimize the amount of sales time and effort it diverts to collections.

CFOS HAVE A LEADING ROLE TO PLAY IN ALIGNING INVESTMENT IN ADVANCED ANALYTICS WITH BUSINESS STRATEGY.

Even as the evolution of data and analytics promises to alter the operating model of finance, these emerging technologies also pose substantial challenges. Advanced analytics rely on data input to produce reliable insights. This means that analytics initiatives require concerted attention, resources, and leadership of data management, governance, and security efforts. Highly sophisticated, machine learning–driven analytics run the risk of residing in a "black box," where they may carry invisible biases and assumptions that substantially affect their output. Even if the models are fundamentally sound, the nonstatistical analysis techniques on which they rely may yield correlative results that can be counterintuitive and therefore difficult to understand, explain, and act upon.

As finance organizations and the broader enterprise grapple with both the rising imperative to make more effective use of data and analytics and the challenges inherent in doing so, a question arises for CFOs and their teams: What argument can and should we make for not just supporting but also taking an active leadership role in advanced data and analytics efforts? The next section will explore that question.

A Call to Action for CFOs

Defining the Analytics Agenda for the Finance Function

For any company, finding the right path to deploy analytics to boost performance—and finding the right answers to the many challenges posed by advanced analytics—will require the effort of multiple business constituencies and a new level of cooperation and coordination across business lines and functions. No single approach will serve every enterprise. What is consistent across a wide range of industries, companies, and functions, however, is the pressure to act. Finance is in a unique position within the company to answer this call to action, because it has:

Broad organizational scope. As a key support function, finance touches every corner of the enterprise—every business line and every functional area. Increasingly, finance's visibility and reach have extended beyond financial metrics, targets, and reports to include the operating drivers of performance. This gives the finance organization strong domain knowledge across the company and places it in an excellent position to be able to coordinate, support, and leverage evolving analytics efforts across the enterprise.

Affinity for fact-based decision making. From strategy formulation down to tactical resource allocation decisions, the business has come to rely on finance not just for financial modeling and analysis but also for a deeper understanding of underlying drivers of performance. As leading-edge data and analytics emerge as a critical source of competitive advantage, the finance function will have a substantial stake in the success of the company's analytics initiatives.

Objectivity and credibility. The finance organization's historical credibility with financial metrics and reports gives it a unique voice of authority in the broader effort to make more effective use of data and analytics. By extending that objectivity and credibility to advanced data and analytics efforts, finance can reassure stakeholders that these models can yield relevant and actionable insights that generate value.

Highly sophisticated, **machine learning–driven analytics** run the risk of residing in a "black box," where they **may carry invisible biases** and assumptions that substantially affect their output.

History of information stewardship. Finance teams have expanded their data and information stewardship beyond financial data to include the bodies of operating data that eventually flow into financial metrics. Now they are in a strong position to extend that influence and oversight to the rapidly expanding bodies of data on which their companies' analytics efforts will depend.

Serving as the focal point of enterprise performance management. The finance function is the focal point of enterprise activity, connecting business strategy to operations to financial results. This enterprise performance management paradigm is critical to companies' ability to optimize their business opportunities and advantages, and to minimize risks to performance—lending CFOs and their teams substantial authority to pursue data and analytics initiatives that promise to improve on, and even innovate, these processes.

Technology-driven disruption of the broader enterprise and the finance function is happening swiftly. Finance leaders will need to capitalize on their unique position in the company to pursue a data and analytics agenda closely tailored to their companies' needs—or risk the finance function's relevance as a strategic and business partner. As Bob Trinh, a former finance executive turned market vice president (general manager) of a division of DaVita Medical Group, puts it, "Finance wants to be part of strategic decision making. If they're not the group people go to for analysis, they'll still be relevant in their role as stewards of historical reporting and of compliance. But they won't be as relevant to strategic decision making."

As a practical matter, what should the finance function's data and analytics agenda look like today? And how can and should we think about preparing the broader finance organization for a more analytics-focused future? The next section proposes a framework for consideration of those questions.

Answering the Call
A Framework for Defining Finance's Analytics Agenda

The speed of change in business and in technology, including the explosion of easy-to-implement cloud-based analytic point solutions, lends urgency to the finance organization's effort to define its data and analytics agenda. But those very factors also contribute a high degree of complexity that finance leaders must cut through to reveal a forward path. Although every organization must find its own way ahead through its own set of complex business considerations, finance leaders may benefit from focusing on five key areas where finance participation, guidance, and even enterprise-level leadership can make a difference:

Shaping—and championing—the enterprise's strategic data and analytics vision. Successful data and analytics efforts emerge from the top down, according to analytics experts. The strategic vision for the role of data and analytics must be formed at the highest levels of the company, and it must also be articulated and advocated for by C-suite executives in order for these efforts to succeed. CFOs have the opportunity not just to formulate their companies' strategic vision for data and analytics but also to become passionate public advocates for that vision across multiple constituencies— within the finance function, across the company, and among customers, investors, and the board.

Supporting technology investment to improve data quality and access to analytics. Once business leaders have established the strategic analytics vision for the company, finance is in a strong position to not only evaluate business cases for investment in data infrastructure, baseline automation, and analytics systems, but also to recognize and initiate strategic infrastructure investments.

For many finance teams, supporting investment in advanced data and analytics initiatives may involve expanding the concept of how data suitable for analysis should be

TECHNOLOGY-DRIVEN DISRUPTION OF THE BROADER ENTERPRISE AND THE FINANCE FUNCTION IS HAPPENING SWIFTLY.

There's a big difference between **data accuracy** and **data sufficiency**, explains Robert Morison, lead faculty with the International Institute for Analytics.

collected, verified, and curated. As Robert Morison, lead faculty with the International Institute for Analytics, explains, "Finance departments are accustomed to handling financial and regulatory reporting. These descriptive activities require very clean data. Predictive analytics doesn't need such clean data; predictive applications don't always need the same volume of data or the same degree of accuracy. There's a big difference between data accuracy and data sufficiency. You want to be accurate for the regulators. You want to be sufficient for the analytical task at hand."

Developing new skill sets and new talent. For analytics to be effective, Morison says, analytics must not only be inherently useful (i.e., based on good data, using models that are a good reflection of that data), but they also must actually be in use. From the perspective of many finance leaders, putting analytics into active use—i.e., using them as a basis for business planning or decision making—can pose its own challenge. "Finance people are used to examining every form and report, making sure that everything is accurate," says Wang. "They're precision people. Analytics are a leap of faith by comparison." Precisely because finance professionals have built a reputation for analytical objectivity and credibility, finance organizations can educate not just themselves but also the company at large on how to make wise and effective use of analytics.

As useful and necessary as it may be to boost the analytical know-how of current staff, it is also clear that acquiring and fostering analytical talent must continue to be a top enterprise objective. Demand for talent will

certainly include those specializing in analytics tools, methods, and technology, but it will also extend to those with the critical thinking skills to ask insightful questions, interpret data, and draw sound conclusions. Companies may soon find themselves in a superheated battle for analytical talent, extending well beyond recognized innovators and FORTUNE 1000 companies to include companies of all types and sizes. To source the best talent as competition intensifies, companies will form closer relationships with top universities, broaden their scope of hiring to include nontraditional candidates (for example, those from science, technology, engineering, and mathematics backgrounds), and revamp their talent acquisition and development practices to engage and retain highly skilled digital natives.

Finding the right business partnering and service delivery models to support the analytics paradigm. To successfully bring analytics to bear at a strategic level, analytics efforts need organizational structure. Lack of organization, resulting in persistent siloing, a lack of coordination, and wasted resources, causes many data and analytics initiatives to stall. At the same time, because analytics efforts tend to emerge as responses to urgent business priorities and needs, they also tend to evolve over time. Not only is there no single, ideal way to organize analysts and deliver analytics services, but the solutions that companies devise to answer their needs also must change as those needs change. Finance organizations have the opportunity to guide this organizational evolution; ensure that business requirements for analytics services are met with a minimum of redundancy and waste; and even, in some cases, take ownership of the management and deployment of analysts and other analytics resources.

Managing change. Although emerging data and analytics technologies hold great promise to improve financial professionals' working lives while boosting their ability to contribute value, experts emphasize that

companies cannot forget the human element in what can seem, on the surface, to be a mostly technology-driven effort. Without buy-in at all levels, analytics initiatives can languish in the face of employees' uncertainty, neglect, and even outright suspicion.

As analytics become increasingly prescriptive, Morison explains, there's a greater chance that analytics will be perceived as usurping authority and decision-making responsibility—dimensions of work that provide meaning and a sense of value. As CFOs consider how to support change management efforts, it can be useful to bear in mind a few questions that are likely to be top of mind for sub-C-level employees. What will this data and analytics initiative mean for me and my function? How will this change what I do? How will it make me more successful? Will I remain relevant? Will there be a place for me and my role in all of this?

In the face of these kinds of questions, positioning analytics initiatives appropriately can be critical, Morison says. "You want to say to people, 'We're taking your baseline performance to a new level, and you'll get to add even more value on top of that,' rather than sending the message that analytics are taking something away from them." Since the simplest (and most automatable) decision-making scenarios can be a drain and a distraction to employees, and analytics are becoming increasingly adept at augmenting human judgment in more complex decision-making situations, there is a strong case to be made to employees that analytics will help them—not replace them.

A Range of Roles for Finance

With these five broad areas of influence in mind, the following table articulates a range of possible levels of engagement in data and analytics efforts for CFOs and other finance leaders to consider as they shape their data and analytics agenda. At both the enterprise and functional levels, advances in technology are calling CFOs and their teams to action. Although no single model for

engagement can answer the unique and complex requirements of every company, this guide is intended to foster fruitful conversations among CFOs, their colleagues in finance, and other key stakeholders.
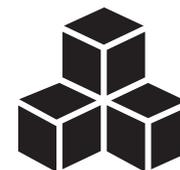
ENTERPRISE PERSPECTIVE

ENTERPRISE-LEVEL LEADER	• Alongside the C-suite, leads efforts to formulate and communicate enterprise-wide data and analytics strategy, including potential for business model transformation
	• Takes ownership of service delivery model for data and analytics; sets organizational structure for data and analytics efforts; houses centralized analytics function/analytics center of excellence within the finance function; oversees and manages analysts and other technical experts embedded throughout the enterprise
	• Alongside HR, spearheads efforts to enhance analytics and critical thinking skill sets, acquire and retain new talent, and manage change
	• Alongside IT, sets and oversees policies and practices for managing, governing, and securing data
	• Leads efforts to identify and fund strategic-level investments in data infrastructure, governance and security, and data and analytics capabilities
PRIMARY ADVISER	• Serves as a key adviser and domain expert in analytics initiatives; acts as a key liaison and point of control between analytics groups and business users
	• Supports efforts to educate business decision makers on how to use analytics effectively in decision making
	• Supports business and functional efforts to develop compelling business cases for investment in data infrastructure, analytics projects, and business innovations
SECONDARY ADVISER	• On request, provides advice to other business and functional areas as they explore analytics adoption
	• Reviews, tests, and validates underlying models and outputs of analytics proposed for adoption
	• Contributes to analytics vendor selection, and provides implementation support and oversight
	• Ensures appropriate stewardship and governance of data

FINANCE FUNCTION PERSPECTIVE

INNOVATOR	Deploys data and analytics not just to inform but also to innovate on the core finance operating model and enterprise performance management processes; supports organizational and technological enhancements that enable the finance function to ask new questions, identify new drivers of performance, and support the business in as-yet unimagined ways; is an enterprise-wide model for digital transformation
POWER USER	Integrates data and analytics with key finance and enterprise performance management processes to drive performance improvement and reduce risk in line with proven methods and approaches
EVALUATOR	Oversees adoption of new data and analytics tools and systems; participates in vendor selection; verifies and monitors the quality of analytic models and their outputs; advocates for and supports data-driven decision making

COMPANIES NEED STRATEGIC THINKERS—NOT JUST AT THE C-LEVEL, WHERE STRATEGIC THOUGHT OBVIOUSLY RESIDES—BUT AT EVERY LEVEL OF THE ENTERPRISE.

The success of data and analytics efforts depends on many factors: good data that's sufficient for the analytical tasks at hand; sound models that reflect the data and yield useful insight; processes and controls that place analytics in an appropriate context and ensure that they're put to use (and used wisely); organizational structures that balance centralized oversight and resource concentration with rapid and flexible adaptation to emerging business requirements; and close attention to the human element— skills, talent, and change management support. All these are necessary conditions for data and analytics initiatives. But they are not sufficient.

In addition to these considerations, companies need strategic thinkers— not just at the C-level, where strategic thought obviously resides—but at every level of the enterprise. For analytics to work, people need the foresight to ask the right questions. Without insightful guidance on the right questions to answer and the right hypotheses to test, analytics efforts are stymied. They cannot direct themselves.

For finance organizations, this means that emerging data and analytics technologies call for an elevation of strategic thinking—innovation, creative problem solving, and a focus on anticipating and shaping the future—throughout finance leadership and deep into the rank and file. "Think of this as an invitation to use analytics to ask and answer questions that you previously thought were beyond reach," Morison says. Along those lines, Wang advises, "Think of the questions you've always wanted to ask but never could: 'What would happen if we added 10 full-time employees to the marketing department versus doing a million-dollar campaign? Which would give me better lift? What would happen if we eliminated the Sunday shift on the production line and added another shift on Thursday? Which is more efficient?'"

If advanced data and analytics are, at heart, an enhancement of the humans who build them and put them into action—augmenting not just their strengths but also their weaknesses—a company's ability to make the best use of them will depend on its ability to foster the human capabilities that will be essential to its future.