



# The CFO mission to uncover the unknown

*Applying analytics and cognitive computing for efficiency and insight*

IBM Institute for Business Value

## Executive Report

CFO, Analytics, Cognitive computing

### How IBM can help

IBM Analytics solutions enable companies to identify and visualize trends and patterns in areas that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, plan, budget and forecast resources better, balance risks against expected returns and work to meet regulatory requirements. For more information, please visit [ibm.com/analytics](https://ibm.com/analytics)

IBM Watson is a technology platform that uses natural language processing and machine learning to reveal insights from large amounts of unstructured data that have the potential to uncover things you don't already know. For more information about IBM Watson, visit [ibm.com/Watson](https://ibm.com/Watson)

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## Why CFOs should care about advanced analytics and cognitive computing

*Finance analytics is taking off, with over two-thirds of organizations expecting to have substantially implemented analytics across most Finance activities in two years. Thirty-one percent of participating Finance organizations were determined to be “most effective,” having higher analytics maturity. Now, with a powerful analytic foundation, these leaders are starting to find out what they don’t know. It is no longer enough to understand what has happened and apply that to what might happen in the future – market disruption clearly demonstrates the need to identify unknown opportunities and risks. In this report, the experiences of leading Finance teams provide insights into capitalizing on the next wave of analytics: cognitive computing.*

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## Executive summary

Tempestuous times. Disruption of the *status quo*. Huge turbulence. Industry convergence. New competitors. These trends highlighted in our latest C-suite Study continue to challenge enterprises worldwide.

Who better to help their enterprises manage such challenges than the CFO? After all, CFOs are expected to play an integral role in performance management. Historically, the emphasis has been on leveraging trusted information to understand and communicate the state of the business (hindsight), and helping to anticipate where the business is going (foresight). That’s no longer enough. In light of today’s multi-faceted challenges, CFOs must help uncover hidden opportunities and risks.

Considering that profitable revenue growth is once again a top priority for CFOs, the need to leverage more data, develop more intuitive analytical models and start using cognitive technologies are essential. CFOs can help their enterprises drive agility and growth by doing more to explore the unknown through analytics and cognitive computing. Leveraging already agile organizations, CFOs with top-performing Finance teams are preparing to do just that.

Mature analytic platforms with an added layer of cognitive computing capability can enable CFOs and their Finance organizations to dramatically shape the future (see Figure 1). CFOs have typically used analytics to assess the current state of the business (descriptive analytics).

More recently, significant investments in integrating information across the enterprise and more advanced analytic models (predictive/prescriptive analytics) have enabled significantly better predictive insights and uncovered new revenue pools. Looking forward, the application of cognitive computing capabilities offers opportunities to further improve agility by enhancing both operational processes and growth by uncovering previously unknown opportunities faster.



**Over 80%** of Finance teams expect to use analytics to drive performance, manage risk/compliance and optimize processes within two years



**The most effective** Finance organizations use macro-economic data in their analytics 96% more than peers and weather data 80% more



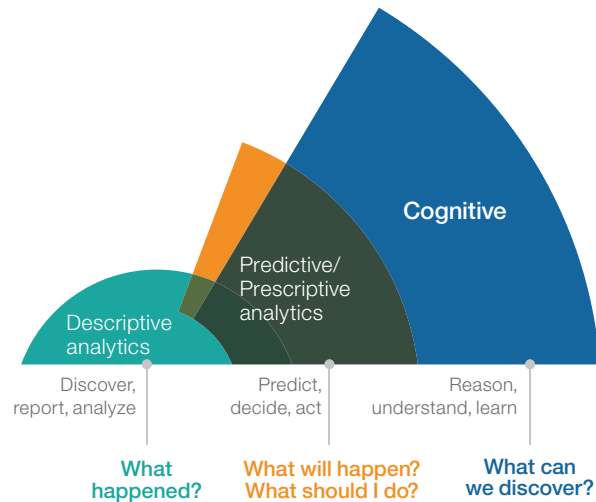
**About half** of Finance organizations plan to implement cognitive computing within the next two years and nearly two-thirds within five years

In 2016, we surveyed 336 senior Finance executives across a variety of geographies, enterprise sizes and industries (see “Study approach and methodology” near end of this report) to look at their usage and adoption of analytics, and plans for implementing cognitive computing technologies.

This report explores the CFO perspective on the state of analytics, what leaders are doing differently that drives their success and how cognitive computing is expected to further transform the Finance function.

**Figure 1**

*The analytics path to cognitive consists of multiple stages*



Source: IBM Institute for Business Value analysis.

## State of analytics in Finance

In 2015, we surveyed 337 senior Finance leaders on their analytics adoption. That study, “Capitalizing on analytics in Finance: Creating trusted insights for the enterprise,” found that most Finance organizations were deeply interested in deploying analytics.<sup>2</sup> In fact, over nine in ten Finance organizations were expecting to implement analytics in the next five years.

Since then, Finance organizations have made significant progress in adopting analytics for various activities, especially in the areas of optimizing Finance processes, fighting fraud and identifying new products and services (see Figure 2).

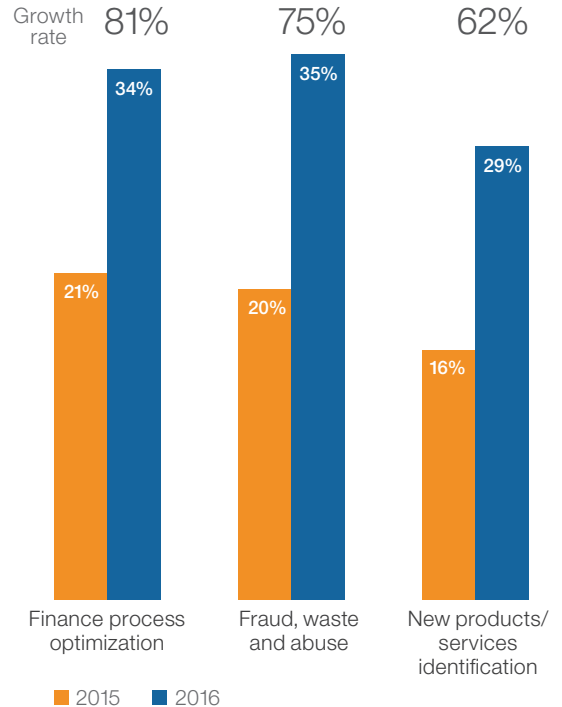
Yet analytics adoption is happening in pockets and is far from pervasive across Finance activities (see Figure 3). The emphasis has been on enterprise performance management, such as financial planning, profitability/margin analysis and management reporting. However, in 2016, less than half of organizations have implemented analytics for these activities.

And even fewer have implemented analytics for areas such as risk management, new products/services identification, and mergers and acquisitions (M&A). In addition, Finance organizations are still primarily using analytics to look backward rather than to anticipate the future and prescribe actions (43 percent report using descriptive analytics, compared to 32 percent predictive and only 25 percent prescriptive).

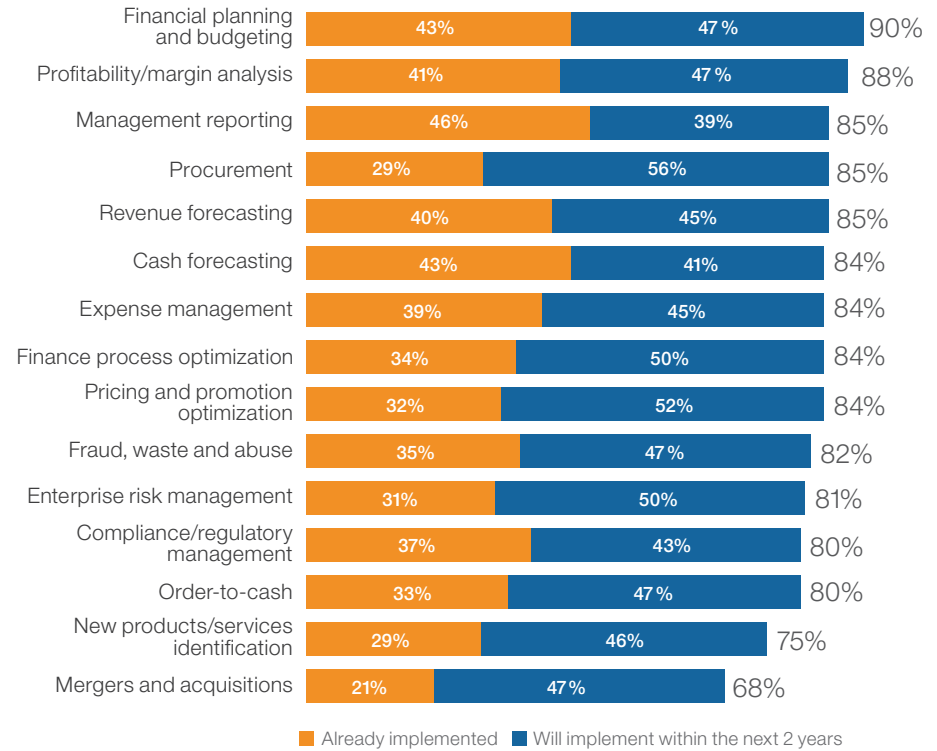
Adoption of analytics across key areas of Finance is set to more than double in the next two years (see Figure 3). Over 80 percent of Finance teams said they will use analytics to drive performance, manage risk/compliance and optimize processes. Executives expect analytics use to grow the most in activities supporting profitable growth: M&A from 21 percent to 68 percent (up 224 percent), pricing and promotion optimization from 32 percent to 84 percent (up 163 percent) and new products/services identification from 29 percent to 75 percent (up 159 percent).

**Figure 2**

*Advancement in analytics adoption*



*Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016; IBM Center for Applied Insights survey of 337 Finance executives across industries, July 2015*

**Figure 3***Analytics adoption not pervasive, but will grow quickly*

Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

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## Finance leaders provide answers with analytics

With investment in analytics poised to more than double in the near term, how can Finance better capitalize on these new capabilities? To help answer this question, we analyzed the survey responses and identified a small group of the most effective Finance leaders, consisting of 31 percent of our 2016 study. This group was more effective than its peers, on average, across ten Finance-focused activities:

1. Cash forecasting
2. Expense management
3. Finance process optimization
4. Financial planning
5. Management reporting
6. Mergers and acquisitions
7. Order-to-cash
8. Procurement
9. Profitability and margin analysis
10. Revenue forecasting.

Why pay attention to enterprises with the most effective Finance organizations? Because they delivered better financial performance than their peers – in both revenue growth and profitability, 40 percent and 43 percent more, respectively.

In addition, their enterprises' analytics capabilities were 74 percent higher than their industry peers. These leaders also played a much larger role in driving revenue growth and managing risks. They were twice as effective at pricing and promotion optimization, 95 percent more effective at new products/services identification, 87 percent more effective at fraud, waste and abuse, and 82 percent more effective at enterprise risk management. In short, the most effective Finance organizations were in a far stronger position to provide valuable insights that can boost the bottom line.

## What are leaders doing differently?

Leaders have set the foundation to take advantage of analytics and prepare themselves to apply cognitive computing. They have driven data, process and technology commonality. For example, they used common Finance data definitions 61 percent more than peers and common non-financial data definitions 92 percent more. They also had a standard financial chart of accounts 47 percent more than peers.

A significant majority (82 percent) of the most effective Finance organizations have gone one step further, with the adoption of enterprise-wide information standards. More than twice as many of the most effective Finance organizations have automated analytics processes as their peers and more than twice as many are fostering the development of new skills in analytics. Finally, the most effective Finance organizations have rationalized the technology platform, including a single version of the truth/rationalized enterprise resource planning instances (60 percent more) and common analytics platforms (2 times more).

As a result, these leading Finance organizations are starting to try to find out what they don't already know through:

- Holistically implemented analytics, especially advanced analytics
- Increased usage of data sources in their analytics
- Scaled analytics talent in a center of excellence.

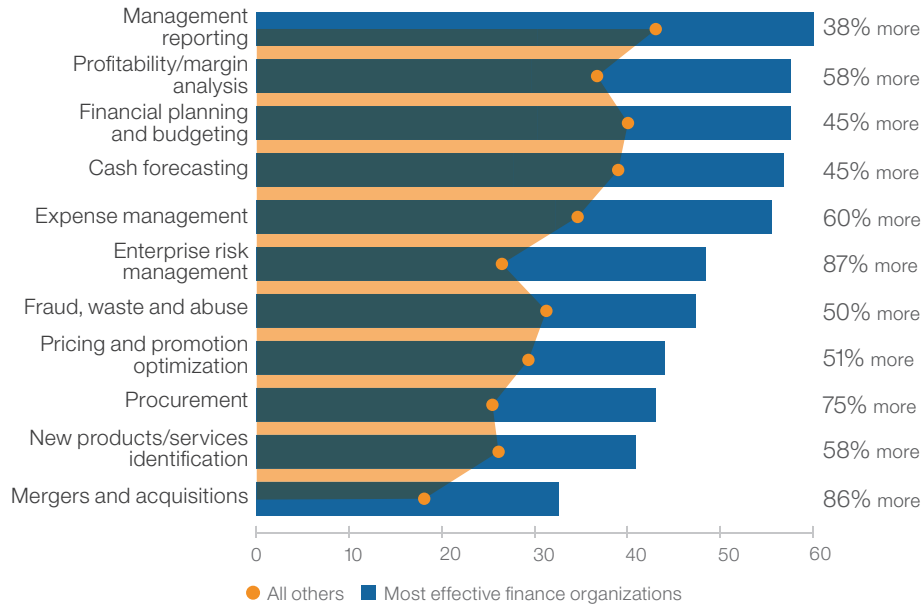


## Holistic implementation of analytics

These organizations are ahead in implementing analytics more consistently across their business (see Figure 4). This investment allows them to plan much more extensively for the future, forecast revenues and manage risk.

**Figure 4**

*Finance leaders are ahead in implementing analytics*



Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

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*“One hundred forty-seven percent more Finance leaders use advanced analytics tools for enterprise risk management, compared to their peers”*

And compared to their peers, they lean more heavily on forward-looking analytics – overall, 16 percent more use predictive/prescriptive analytics. For specific Finance activities, leaders use these advanced analytics for decision support to manage disruption, and keep up with speed and insight.

For example, 147 percent more leaders use advanced analytics tools for enterprise risk management than their peers (38 percent versus 15 percent, respectively); 114 percent more leaders use them to address fraud, waste and abuse (34 percent versus 16 percent); and 109 percent more leaders use them in mergers and acquisitions (23 percent versus 11 percent).

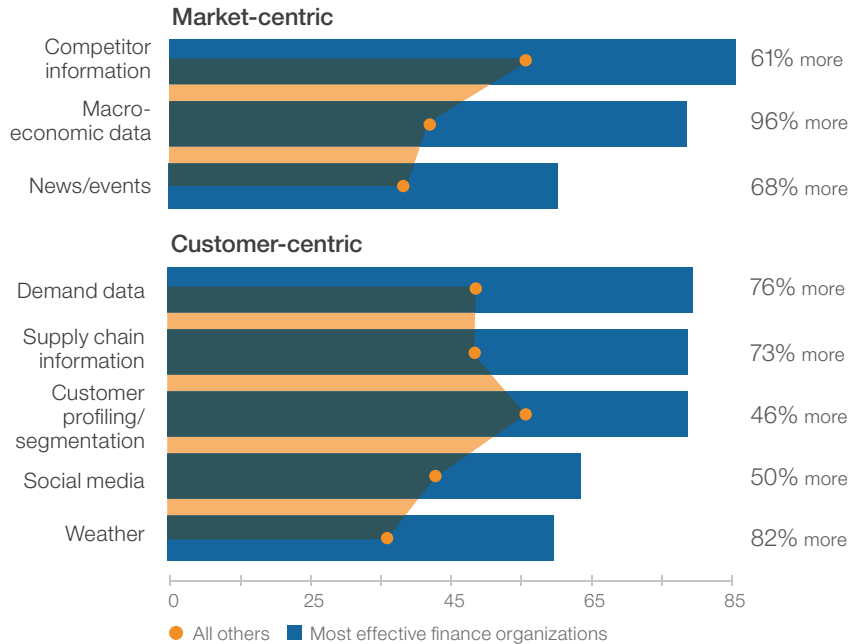
As a result, these leaders are applying the analytics to decision-making. For example, 90 percent are using analytics to make decisions, 89 percent to prioritize business alternatives, 87 percent to evaluate market trends and competitor actions, and 84 percent to identify new growth opportunities.

## Increased usage of data sources

Leaders incorporate many more data sources into their analytics than the rest of their cohorts, especially unstructured data (see Figure 5). They leverage both internal and external data to address market changes, enhance customer acquisition and improve their operations.

**Figure 5**

*Finance leaders incorporate more data sources for analytics*



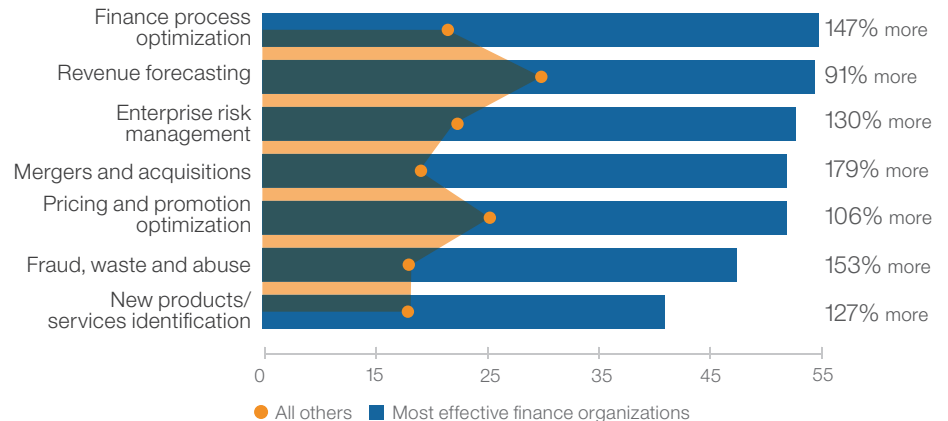
Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

## Scaling expertise with analytics

These leaders have adopted the use of centers of excellence for analytics 97 percent more than their peers. This helps create service scalability. In terms of scope, they are holistically placing many Finance activities into a center to focus on growth, manage risks and improve efficiency (see Figure 6).

**Figure 6**

*Finance leaders incorporate more scope in their analytics centers of excellence*



Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

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## Transformation through cognitive technologies

Looking forward, those enterprises farthest along the analytics journey are best positioned to leverage cognitive computing opportunities. Cognitive technologies can help Finance organizations bridge the gap between unknown opportunities and current capabilities. They can more fully harness hidden insights that reside in data – structured and unstructured – for discovery, insight and decision support. *Why?* Cognitive-based systems can digest and analyze vast amounts of disparate data and accelerate, enhance and scale human expertise.

Cognitive solutions provide more powerful predictive methods to draw out correlations between related operational, external and financial data, such as revenue and cost changes driven by customer demand, supply chain change, weather impacts or other external factors.

The potential to expand the speed, insights and capability of traditional Finance analysts presents significant opportunities. In Finance, the application of cognitive capabilities is expected to enhance decision-making processes in both operations and performance analysis. Across operations, cognitive technologies improve transaction processing and resolution processing. For instance, applying cognitive capabilities to the order-to-cash (OTC) process can produce more accurate billing and reduce the volume of exceptions in cash applications. Ultimately, this can accelerate working capital, improve cash forecasting and reduce costs.

Cognitive-enabled performance analytics offer tremendous opportunities to accelerate and automate the integration and organization of internal and external structured and unstructured data to uncover the unknown. Cognitive technologies can be trained to look for relevant patterns and outliers to discover new insights, significantly enhancing the work of Finance analysts.

Finance executives agree that cognitive computing has the potential to radically change their enterprises. Among the most effective Finance organizations, over 80 percent said it will play an important role in the industry and Finance operations, and critically impact the future of their organizations.

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### **What is cognitive computing and what does it do?**

Cognitive computing solutions offer valuable capabilities that can transform how organizations think, act and operate. They enable powerful, fast and accurate solutions. Cognitive-based systems accelerate, enhance and scale human expertise by:

- Understanding natural language (or sensory data) and interacting more naturally with humans than traditional programmable systems
- Reasoning: Forming hypotheses, making considered arguments and planning
- Learning and building knowledge.

## Cognitive computing opportunities in Finance

Finance organizations can apply cognitive computing across the function; more broadly in certain areas and more deeply in others. In compliance and regulatory management, for example, cognitive capabilities enable learning through ingesting, parsing and classifying regulations. As the body of defined obligations grows, cognitive systems use the learning process to identify and understand obligations from new documents being ingested.

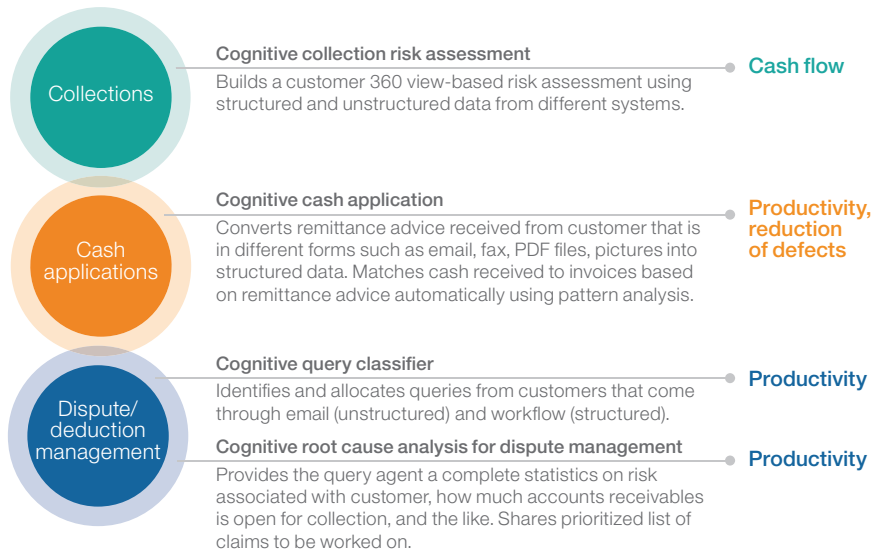
In new products/services identification, cognitive computing components help explore new product/services ideas by investigating a broader corpus of information, such as consumer needs, industry insights, competitive insights and forums. They can focus research efforts on opportunities with higher odds of success by using prior history, adjacency and feasibility analysis. Cognitive capabilities also assist development and testing to accelerate in-market instantiation, for example, by incorporating consumer/supplier feedback into testing features.

To address fraud, waste and abuse, Finance organizations can use machine learning and stream computing to create virtual “data detectives.” Compared to existing fraud detection systems that operate on a set of rules or by singling out specific types of transactions, cognitive tools can analyze historical transaction data to build a model that can detect fraudulent patterns. This model can then be used to process and analyze a large amount of transactions as they happen in real time. Each transaction can be given a fraud score, which represents the probability of a transaction being fraudulent.

For the order-to-cash process, Finance teams could apply cognitive computing more deeply in collections, cash applications and dispute/deduction management (see Figure 7). This could improve working capital, enhance productivity and reduce defects.

**Figure 7**

*Cognitive computing can improve cash, enhance productivity and increase quality in the order-to-cash process*



Source: IBM Global Business Services, "Cognitive Computing for Process Re-imagination: Cognitive Solutions and Services in Finance and Accounting Processes," June 2016

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*“Revenue forecasting and procurement edged out other focus areas - each cited by 66 percent of respondents - as top priorities for implementing cognitive computing within five years”*

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## Implementation of priority cognitive computing areas

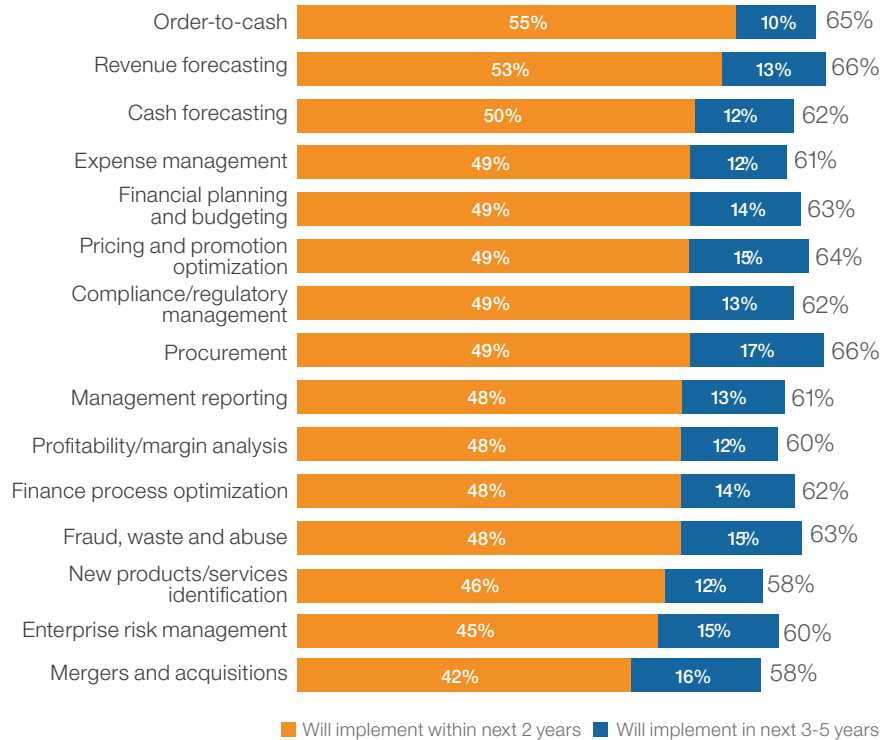
So where do Finance organizations specifically want to invest in cognitive computing?

Research respondents identified that the cognitive computing priorities for Finance are on both efficiency and insights.

To increase efficiency, 48 percent expect to invest in Finance process optimization and 35 percent in expense management. To obtain greater insights, they plan to invest in management reporting (45 percent), financial planning and budgeting (38 percent), and revenue forecasting (37 percent).

About half of surveyed Finance organizations plan on implementing cognitive computing within the next two years, and nearly two-thirds expect to do so within five years (see Figure 8). In the more immediate period of the next two years, their highest priorities are on order-to-cash (55 percent of all respondents), followed by revenue forecasting (53 percent). Within three to five years, 66 percent of the full sample aim to use cognitive technologies for both revenue forecasting and procurement, followed by order-to-cash (65 percent).



**Figure 8***Finance's adoption of cognitive computing will come soon*

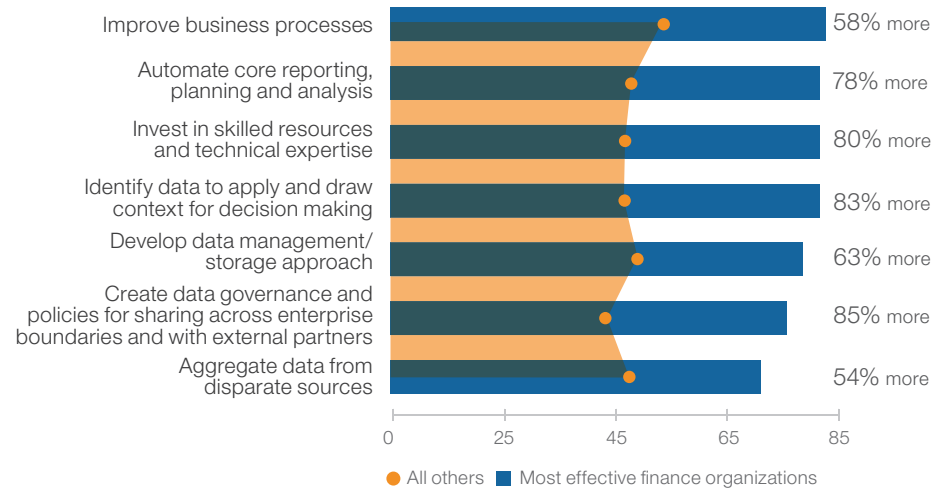
Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

## Taking advantage of cognitive computing

Beyond the actions that the most effective Finance organizations have prepared to take advantage of analytics, these leaders have done even more to lay the foundation for cognitive computing (see Figure 9). They have put in place data management/governance, improved and automated processes, and invested in skills with statistical backgrounds and cognitive technology experience.

**Figure 9**

*Finance leaders have taken actions to implement cognitive computing*



Source: IBM Market Development and Insights, Finance Analytics and Cognitive Customer Research, June 2016

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## The way forward

**Prioritize where to apply analytics and cognitive computing.** Analytics and cognitive solutions are well-suited to a defined set of challenges. Analyze each specific problem to determine if these capabilities are necessary and appropriate:

- Does the challenge involve a process that today takes humans an inordinate amount of time to seek timely answers and insights from various information sources?
- Does it involve a process that requires providing transparency and supporting evidence for ranked responses to questions and queries (such as regulatory compliance)?
- Can new data sources be leveraged to improve decision-making capabilities related to processes or new profitable opportunities?

For each problem, establish an integrated data strategy to identify the key data sources.

**Lay the foundation.** As learned from the most effective Finance organizations, CFOs need to drive commonality with data, process and technology through standardization, governance and rationalization. CFOs also should incorporate new market-centric (such as news/events) and customer-centric (such as social media and weather) data sources that are relevant to high-priority analytics and cognitive computing opportunities.

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*“Drive commonality with data, process and technology through standardization, governance and rationalization”*

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In addition, Finance organizations should establish a center of excellence for analytics to scale expertise. The scope should include activities targeting revenue growth and risk management. Finally, analytics and cognitive computing will require skills investment. Business partnering and analysis skills are critical to apply the necessary decision making. Cognitive computing requires expertise in natural language processing, machine learning, database administration, systems implementation and integration, and user interface design.

**Collaborate closely with C-suite peers.** The high priority analytics and cognitive computing opportunities requires CFOs to work successfully across the C-suite. The C-suite has to holistically tackle enterprise risk management and fraud, waste and abuse, and orchestrate identification, mitigation and response.

To aim for revenue growth, CFOs must partner with CMOs to optimize pricing and promotion, identify new products/services, and target customer profiling/segmentation. CFOs also need to collaborate with CHROs to improve workforce acquisition and retention, and with CSCOs to link supply chain information with demand data.

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## Are you ready to use cognitive technologies?

- What benefits could you gain in being able to detect hidden patterns locked away in your customer-centric data?
- What external data can you leverage to identify new sources of revenue growth?
- What is the cost to your organization associated with not having the full array of possible options to consider when actions are being taken?
- What capabilities do you require to support and manage cognitive computing services in your Finance organization?
- What would change if you could equip every Finance staff to be as effective as the leading expert in that role?

### About the authors

William Fuessler leads the IBM Global Finance Risk and Fraud practice for IBM Global Business Services. The practice helps clients transform the finance function to be more strategic, address new risks and challenges, and drive enterprise-wide profit improvement by fighting fraud. His client experience includes numerous finance transformation projects, including process redesign, enhancing data consistency, developing target operating models and advanced analytics. Under his leadership, IBM the 2010 CFO study, “The New Value Integrator” and 2014 CFO study, “Pushing the Frontiers,” defined the future of the finance organization. He can be reached at [william.fuessler@us.ibm.com](mailto:william.fuessler@us.ibm.com).

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### For more information

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### Notes and sources

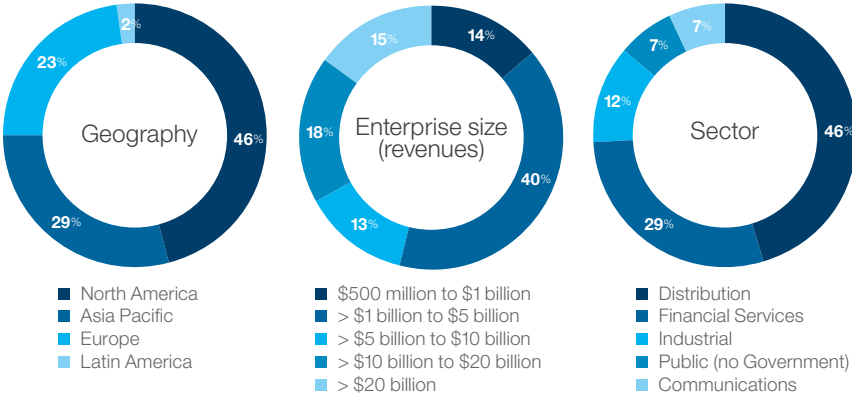
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**Study approach and methodology**

In May and June 2016, IBM Market Development and Insights conducted customer research into the adoption of analytics and cognitive computing for Finance organizations. Research included 336 Finance executives around the world representing a variety of industries, geographies and enterprise sizes.



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