

Big data comes of age in FP&A

Financial planning,
budgeting, and forecasting

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Executive summary

In September 2013, KPMG gathered a group of executives from some of the top global companies to discuss challenges, opportunities, and insights in financial planning and analysis (FP&A). Participants exchanged views on the role of the FP&A function in today's economy, which is showing slow but steady recovery.

Notably, companies continue to adopt "Big Data" technology to enhance their businesses and to consider how emerging technologies will help them pursue future profits. The conclusion of the share forum was that FP&A is going to embrace data and analytics in a very serious way. The participants in this year's share forum framed the discussion around the following five topics:

- ▶ Economic conditions
- ▶ Zero-based budgeting inside an EPM framework
- ▶ How big data and analytics will impact FP&A
- ▶ Data analytics technologies
- ▶ Data analytics frontiers.

Economic update – Slow but steady To put the "Big Data" discussion in greater context, economists from the Federal Reserve Bank of Chicago provided an overview on the state of the economy. According to the Federal Reserve, near-term economic growth in the United States improved over the past year, as the long-awaited recovery began to gain momentum in several sectors. Most forecasters now expect real GDP growth of around 2.7 percent at the end of 2014. Industrial production remained well below historic averages during the first seven months of 2013 before recovering in the latter part of the year. Nonfinancial firms continue to have strong balance sheets and report rising profits, but global macroeconomic uncertainty makes executives cautious about large capital expenditures.

Zero-based budgeting inside an EPM framework Many technology companies have been discussing zero-based budgeting as a way to cope with significant business change. The "orthodox" approach to zero-based budgeting is the practice of setting every budget item to zero in every department for every account. This has not really worked in practice, as many people see having to justify every budget item as overly time consuming compared to its benefit. However, zero-based budgeting under an enterprise performance management (EPM) framework can be a more practical approach. EPM combines strategic and operational planning, budgeting, reporting, forecasting, and pay-for-performance. This approach requires that each incremental budget request be tied to the company's strategy and corresponding initiatives.

The impact of big data and analytics on FP&A Big data and analytics are expected to have a significant effect on the FP&A function, and they bring up many issues for companies to consider. These issues include functional issues related to data access and synthesis, monetizing data, and using data for effective decision making in planning, budgeting, and forecasting. They also include strategic challenges such as meeting the increased demand for new skills in the FP&A function and considering the implications of a technology investment.

Data analytics technologies Big data has led to the emergence of new data analytics technologies, which are a key to getting value out of large volumes of data. Companies now capture all available data, explore it, and disaggregate it down to the areas that allow them to understand and grow their business. FP&A can help in this area by performing cost analyses that can lead to cost reductions and by evaluating revenues by line of business, functional area, or regions. This use of data analytics can provide a sustained competitive advantage.

Data analytics frontiers While scalable processing, cost-effective storage technologies, and open source applications have enabled the growth in data, applications for data-driven decision making are the next "big thing." This includes improved data mining and the evolution of data science into predictive analytics.

Economic update: Federal Reserve Bank of Chicago



Near-term economic growth in the United States improved over the past year, as the long-awaited recovery began to gain momentum in several sectors. The U.S. economy has averaged about two percent in real GDP growth since the second quarter of 2009, and maintained a similar pattern through 2013. Most forecasters now expect growth of around 2.7 percent at the end of 2014.

Inflation remained low in 2013, and declined to 1.3 percent in the third quarter. Lower-than-average production, labor market growth, and industrial production have restrained inflationary pressures. As measured by the Consumer Price Index, 2013 inflation is expected to be 1.5 percent (compared with predictions of 2.1 percent for the year).

Industrial production rose at an annualized rate of 1.4 percent during the first seven months of 2013—less than half of historic averages—before recovering to an annualized growth rate of 7.1 percent in the August–November period. The U.S. housing market showed similar recovery, adding 0.4 percentage points to overall economic growth of 2.0 percent from mid-2012 to the third quarter of 2013. In contrast, real personal consumption expenditures were slightly lower than forecast, and real business fixed investment was weaker than expected.

Within the business community, nonfinancial firms continue to have strong balance sheets and report rising profits, but macroeconomic uncertainty—particularly in global markets—is still inspiring caution regarding large capital expenditures.

The labor market continues to recover slowly while still bearing scars from the 2008 recession. The unemployment rate fell to 7.0 percent in the final quarter of 2013—a year-over-year improvement from the 7.8 percent reported in December 2012, but still well above historic averages.

The Federal Reserve has set a 2014 target of 2.7 percent in real GDP growth, which marks an improvement from expectations of 2.0 percent expansion in 2013, and would be the highest growth rate in three years. Real business fixed investment is expected to record a growth rate of 3.7 percent in 2014, and industrial production is forecast to grow at a 2.7 percent rate.

With other economic trends improving, the Fed in December 2013 signaled an easing of stimulus measures. The Fed reduced its \$85 billion in planned monthly asset purchases by \$10 billion, and economists expect gradual reductions to continue throughout 2014.

The Fed has indicated its plans to maintain low interest rates at least until the unemployment rate is less than 6.5 percent. Nonetheless, it may adjust the pace of purchases based on changes in the labor market outlook or changes in inflation.

Zero-based budgeting inside an EPM framework



“We’ve been on a journey to force more of a business-unit mentality into an organization that tends to be more functionally structured.”

Share Forum participants debated the benefits of different approaches to budgeting in the current business environment. Given the state of change in the technology industry, some companies have reintroduced the idea of zero-based budgeting inside an enterprise performance management (EPM) framework as a method of dealing with significant business change.

One participant described her company’s goal to view its entire budget portfolio together, and not in silos, in order to enable the firm to make budgeting trade-offs across the entire organization. Another participant discussed how her firm was functionally organized with a centralized budget process under FP&A. The company has only one profit and loss (P&L) statement, and the FP&A function is where the entire budget is analyzed from a profit perspective.

A third participant said his company is trying to drive P&Ls down to lower levels of management to help ensure everybody has a view of how they are adding value to the company. “We’ve been on a journey to force more of a business-unit mentality into an organization that tends to be more functionally structured,” he said. “We’ve gotten better at capturing the data on product-specific P&Ls, rather than the direct cost, variable, and direct-fixed cost.”

The share forum also discussed issues around budget allocations. One participant noted that arguments about budget allocations are “always at the wrong level” because they are between analysts for the business unit and analysts for the function. “It really needs to be the CEO, the CFO, and that functional manager who make the decision about how much we’re going to spend in some of these platform areas.”

The forum also discussed different approaches to the potential reintroduction of zero-based budgeting. One participant described the “orthodox” approach to zero-based budgeting under an activity-based budget framework as the practice of setting every budget item to zero in every department for every account. This has not really worked in practice, participants noted, because many people see having to justify every budget item as overly time consuming compared with its benefit. A participant said her firm was trying a hybrid approach in which they don’t start at zero but try to show each business group or function how it spends all of its money.

Another participant discussed zero-based budgeting under an EPM framework, which coordinates strategic and operational planning, budgeting, reporting, forecasting, and pay-for-performance. This approach to budgeting requires that each incremental budget request be tied to the company’s strategy and corresponding initiatives.

To do this, companies need to develop a clearly defined strategy, pursue initiatives to support that strategy, break down initiatives into projects, develop documented action plans for each project, and identify and resource these action plans in the budget. Identifying and resourcing these action plans is the most important part of this approach, the participant noted, but it is also time consuming. The participant described this approach as more practical than the “orthodox” approach of setting every budget item to zero. “I’ve seen the practical work,” he said. “So far I haven’t seen orthodox across the company work.”

The impact of big data and analytics on FP&A



The bulk of the share forum was dedicated to discussing big data and analytics and their expected impact on the finance function. Overall, participants expect these technological advancements to have a significant effect on the FP&A function, which is a major focus area for CFOs, according to a survey conducted jointly by KPMG and CFO.com.

Big data can be thought of as an expansion of data available for analysis that includes unstructured data, textual searches, managing large volumes of data, and the organizational implications of data ownership, control, and access. Coupled with the ability to apply both conventional and advanced analytics to this broader and larger source data, big data and analytics could improve forecasting and lead to competitive advantage. While many organizations are already exploring how to apply these new analytic capabilities in marketing and in serving clients, the challenge for many companies is to learn what they should do with this new capability in support of the finance function. This includes how they can enrich operational and financial forecasts and make them more accurate.

In addition to possible benefits, big data and analytics bring up many issues that companies must deal with over the next two years. These include issues in data access and governance, potential uses of new data types, changes to the role of the chief financial officer (CFO), evolving demand for new skills in the FP&A function, newly available data tools, and how new data and analytical methods can be used for effective decision making and forecasting.

Data access and governance

Data access and governance, which includes assessing data relevance, have become major issues. “Now we’re just adding this whole other dimension of data on top of what we haven’t yet cracked the code on,” one participant said. Closely related is the ability to synthesize data across operational, financial, and customer information. This capability raises two significant issues. The first is the internal discussions required with functional owners of potential source data. The second issue, perhaps even more important, is the awareness that many finance areas have not exploited the data to which they already have access.

From a technical perspective, organizations have gained efficiency by tackling the concept of master data management, or the standardization of hierarchies across applications that support operations and finance functions. Companies now face the challenge of identifying how to manage this new data and new data types in the same manner so that many functions can get the benefit of a consistent view of the information.

Most companies are only partially involved in this exercise, and it is now being further complicated by the addition of new types of data. One participant noted that an issue here is how to “make it relevant and make the hierarchies dynamic so that you can keep it evolving and scaling with the business to the extent that what was important yesterday is not going to be important today.”

Another participant described the idea of the “intelligent enterprise approach,” which requires an organization to fundamentally change its approach to data. The organization must first define what KPIs, metrics, and measures leaders need to manage the business and define strategy. Next, they must understand their entire information and data portfolio to align the application of new methods and technologies to a coordinated overall strategy. This approach allows them to address point issues, information silos, and the inclusion of new data types in a deliberate and organized fashion that aligns and supports a broader strategy.

The changing role of the CFO

Another major issue is how big data is changing the role of the CFO within finance as well as in terms of data ownership and governance. This also has implications for the roles of the chief marketing officer (CMO), the chief information officer (CIO), and the chief operating officer (COO).

The CFO now expects to use the data to provide insights and show trends. “It’s not just rolling up the numbers and saying here is what you did,” one participant said. “It’s about what could you do in scenario planning and bringing the groups

together to actually have those planning conversations.” CIOs are now contemplating what is needed to support emerging new uses of data. This highlights the importance of the CFO and CIO partnering even more closely than in the past. As information becomes a key competitive advantage through the better application of data, the CFO’s role of data steward appears to be increasingly important as the data becomes a strategic asset to the organization.



New skills requirements

Big data and analytics are also having an effect on the skills required for the finance department. One forum participant discussed the shift in the finance skills set and the concern that there will be a shortage of data scientists. “My perspective is that our finance groups are the business data scientists of the future that are going to fill that gap,” she said. There was also discussion on how finance has both an influencing and a technical dimension, with the technical dimension related to data exploration. “The person who can mine your data isn’t necessarily going to be the one talking to the CEO, but you need to have those data miners in your organization,” she said.

Participants agreed that the finance skill set is evolving. New hires are expected to have not only fluency with data and the tools needed to explore that data, but also soft skills in order to move up in the organization. This includes a much deeper understanding of operational areas within the organization. One participant said good finance people must have data skills, be strategic, and be articulate. “Some of the things that we are doing with big data now just require a skill set that is not the finance concentration,” he said. They will need to be able to identify new opportunities more broadly within the organization and possess the organizational skills to create consensus across functions to unify that data collectively in support of strategic opportunities.

Another participant discussed using FP&A to try to help grow the business by reducing costs and evaluating revenues by line of business, functional area, or regions. “Businesses are becoming a lot more complex with new products, new acquisitions, and lines of business,” he said. He also discussed the importance of having a system set up for data discovery, as opposed to only standard reporting, and getting the FP&A team to be self-sufficient in this area. He noted the importance of bringing the business analyst closer to the data sources and providing an environment for the analysts to manipulate the data without requiring an intermediate layer.

While McKinsey has stated that there will be a shortage of data scientists in the coming years, there is rising awareness that the current population of business analysts will evolve to fill some of that need. CFOs are considering what that means to their current analyst population and how to accelerate their development as the business analyst of the future.

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New data tools

Participants also discussed how new data visualization and data discovery tools are putting new capabilities in the hands of finance professionals. “The true capabilities of these tools are starting to catch up with the hype, and it’s the first time in a long time I’ve seen something kind of new and exciting come out along those lines,” one participant said.

Participants discussed innovation around functionality and noted the significant changes in the accessibility and usability of data. “There are a number of different products out there and certainly a whole plethora of smaller firms who are delivering some of this

capability from the cloud,” one participant said. “There is this understanding that that’s the direction people are going,” she said.

There was general agreement across the group that the market for visualization tools is evolving very quickly in terms having a “window” into both traditional and emerging forms of data. This is another factor likely to accelerate the need to address the issues under discussion.

Investment decisions

The forum also discussed how companies make investment decisions around data systems. One participant said firms should experiment with new technologies by starting small. That way, they can pick a business unit, get user feedback, look at adoption, and measure performance before and after implementation. This also allows them to test for speed, benefits, and ease of use. “I think it’s possible to experiment with it and to think about apps as opposed to infrastructure,” she said.

The panelists discussed the issue of the finance function being “last in line” for investment in big data applications. One panelist noted that while big data is currently considered an operations

project, finance is the only function that goes across all other functions. “I think we’ve done a better job of having this be operations-pull as opposed to finance-push,” he said.

Panelists also discussed the fact that this market is both nascent and evolving extremely quickly. Cautious entry and experimentation are preferred over massive investment in technologies that will likely look very different in the near future as the delivery mechanisms for information improve.

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The continuous forecasting cycle

Share forum participants also discussed the external data sources that they might need to enable them to complete and enhance the continuous forecasting cycle. One panelist explained that companies develop ideas of what they want to do as they go through a planning, budgeting, and forecasting cycle. They then decide what data they need to support the business case.

The process is reversed as the company measures performance and looks at the results of those investments. The question then is “what is the big data telling you about the ongoing credibility of that business case,” he said. “Does that need to be altered?”

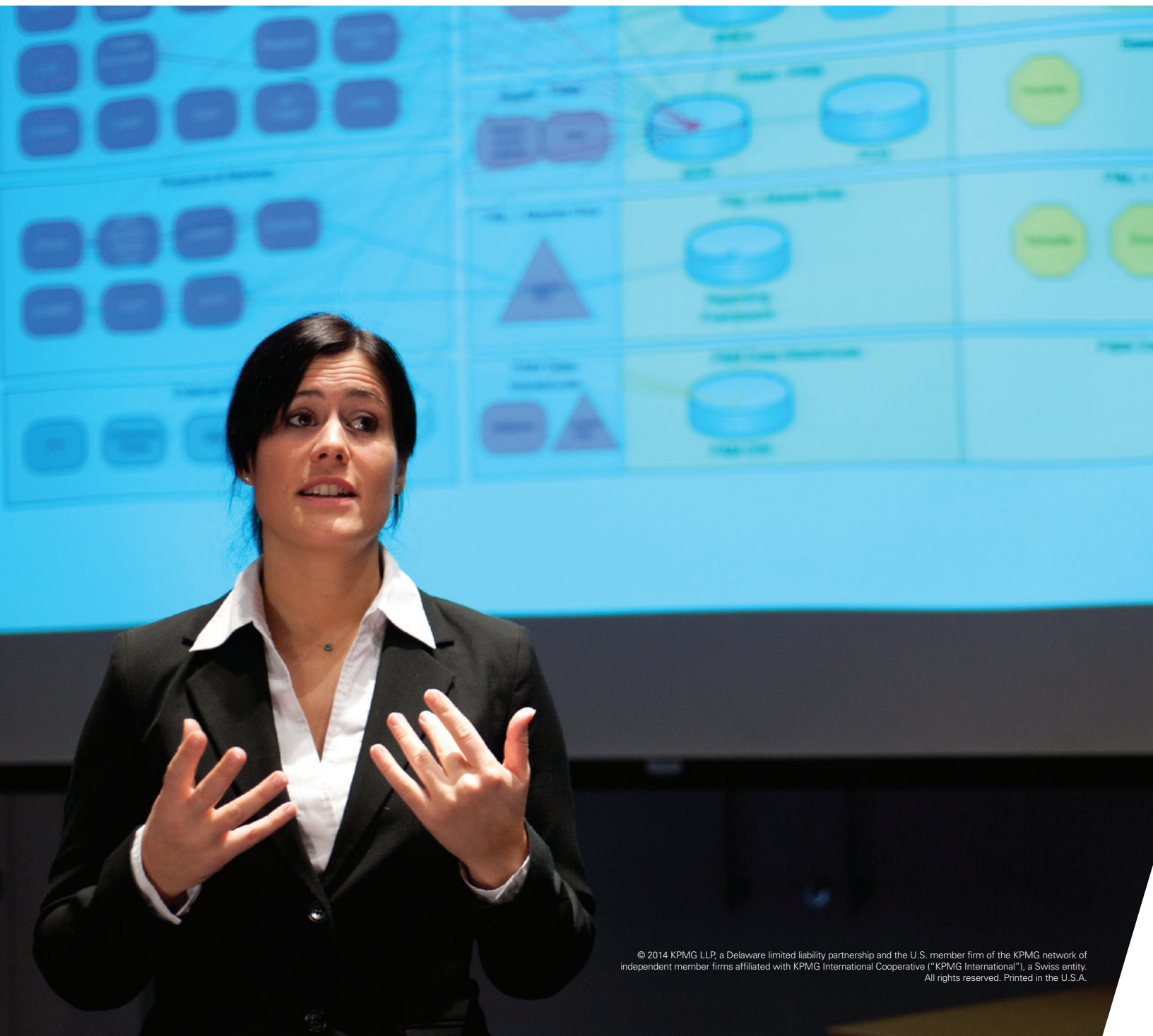
Another participant, however, argued that big data is better for business enhancement than it is for forecasting. “Just trying to go for that extra amount of forecast accuracy doesn’t feel like

the most fertile area for me,” he said. It was generally agreed that the most benefit will come from new insights from data that previously could not be explored to enrich forecasts rather than to drive improvements in accuracy. The group also discussed how new insights derived from big data might be included in an iterative improvement of the forecasting function.

Interestingly, another participant noted that the topic of big data is coming up during the management committee’s discussion on risk. Management committees are looking to see if they can leverage data to identify emerging or unknown risk areas as well as additional risk areas related to data as an asset.



Data analytics technologies



“As visualization tools front ending big data technology evolve, we will see the evolution of the business analyst into the business data scientist. Imagine if you could identify leading indicators based on all the data available to you, adjust your forecasts, and effectively drive that information into operations. This is the promise of big data for FP&A.”

— Xena Ugrinsky, Principal KPMG LLP Enterprise Solutions
- Performance Management/Analytics

Forum participants described new data analytics technologies and applications as a key to getting value out of the increased volumes of data. The old approach to data was that someone knew what data they needed and captured only what they needed. Businesses have become more complicated, however, and they often don't really know what data they need. As a result, companies now capture all the available data and then explore and disaggregate that data down to the areas that allow them to understand and grow their business.

One participant said analytics can drive a sustained competitive advantage for a company. “You might be able to start to predict things and “operationalize” those into your business and start to automate that across your business,” he said. “This is where you can really drive value as you go up the analytics maturity curve.” The participant also discussed how his firm tries to drive more value by acting on the data faster and sooner.

Forum participants discussed several examples of what data analytics can achieve, from managing a large number of brands across many markets to

identifying new cost-saving measures. One participant discussed how analytics can help develop a graphical and visual language that makes the data more transparent and accessible to the user.

“It’s the idea of establishing a common visual language where people can quickly understand a graph and what it means without having to look at the legend or interpret it,” he said. “When you get to a state of having a common visual language for looking at the data across your company, that’s when it can become radically value generating.” These ideas tied back to the earlier discussion on the evolving market for visualization tools that improve the translation of complex analytics into business analysis.

Monetizing big data

Perhaps the biggest data issue facing companies is how to monetize their data. One participant discussed two approaches that many companies take. The first is the “big bang” approach in which companies create a “data lake” and then try to figure out the benefits they can get from it. This is a costly and time consuming approach, as it is often difficult to get the business to understand the “data lake” and visualize what to do with it. A second, less costly approach is for a company to buy a specific tool to experiment in different finance areas—in essence, solving for one business issue at a time. The company then retakes control of the tool and figures out how to apply it more widely across the organization.

Participants noted that the discussion around how a company can turn its data into a monetized asset is a significant part of the strategic investment discussion in Big Data and analytics technology. A main topic surrounding this, however, is deciding who is responsible for analyzing how to monetize the data and the associated risks related to privacy, as in the case of customer information.

Data analytics frontiers



“Our view is really that in the evolution of applications, data-driven applications are the next big thing.”

The share forum also included a presentation by a venture capitalist and founder of an incubation firm that focuses on data analytics companies. The participant provided an overview of developments in data analytics technologies in Silicon Valley, his outlook for the next five to ten years, and the challenges that data technology developers are facing.

The presenter discussed how scalable processing, cost-effective storage technologies, and open source applications have enabled the growth in data. He also noted the evolution from back-office automation, which was primarily mainframe, to access to data anywhere from the Web, to social and mobile data, and now to data-driven decision making. “Our view is really that in the evolution of applications, data-driven applications are the next big thing,” he said.

He detailed the proliferation of data sensors and devices on the consumer side, in such areas as automotive and healthcare. On the business side, he said there is a next generation emerging in data-driven applications across different functional areas and across different vertical industries. He also noted the impact that big data has had on the public sector, as it has enabled smart cities and other social programs. “You also see a lot of use of data, open cities, open government, and a lot of social good,” he said.

The presenter said decision making is what makes big data important, as it helps avoid confirmation bias and other drawbacks of relying on intuition and experience. “If you’re thinking about making decisions that scale, if you’re thinking about systematic decision making, data-driven decision making will almost always win,” he said.

He also noted that the view of big data as simply a large volume of data is very narrow. “The big thing that’s happened is the ability to use unstructured data in addition to structured data,” he said. He noted that processing unstructured data was not possible in the past due to high costs. A lot of the new data today is coming from data that was not collected in the past simply because the technology to process it did not exist.

The presenter explained the evolution of data science as going from business intelligence and finding what happened, to data mining and understanding why something happened, to predictive analytics and determining what is likely to happen.

He also discussed the use of data mining in retail. “What data mining is trying to do is extract insights, find patterns, find anomalies, and kind of go to the next level and answer the question of why did it happen,” he said. “So a lot of the buzz today is about predictive analytics,” he said. “You see its extensive use in advertising in e-commerce.”

Conclusion





The FP&A function has adopted big data and analytics technologies to enable advancements in planning, budgeting, and forecasting methodologies. These technologies, however, will disrupt the office of the CFO. CFOs need to confront some major challenges, including changes to their own roles, new skills requirements for finance, decisions on which technologies to invest in, and how to protect and/or monetize their data assets. For companies that can handle these challenges effectively, advanced analytics will become a competitive advantage. Most importantly, big data is the key to predictive analytics. This application of big data will significantly enrich the ability of companies to forecast, as they evolve from budget collection and high-level forecasting to true econometric-driven forecasts that drive real accountability across the organization.

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