Chapter Twelve
Strategically Use Business Analytics

By Jeffrey C. Steinhoff

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The magnitude of today's fiscal challenge and the considerable gulf between the public's expectations and its assessment of federal government performance require substantial cost reductions and fundamental change in the way services are delivered. With advances in information technology and improved data reliability overall, federal agencies have more and higher quality information at their fingertips. The question today is how agencies can best leverage this information. The answer is through the expanded and strategic use of advanced business analytics.

Ideally, instead of relying on across-the-board budget cuts, federal agencies should be able to strategically reduce costs. Advanced business analytics have proven to be powerful tools in channeling resources to programs and activities of the highest value, providing quantitatively based estimates of future conditions, performance, and results, and shining a bright light on potential problems.

While many federal agencies are now demonstrating the value of advanced business analytics, their vast potential has yet to be tapped. This chapter explores the application of these valuable tools to reduce costs and improve performance.

Analytics Provide a New Window to Strategic Decision-Making

Business analytics come in many shapes and sizes and can be strategically tailored to the needs of management. Analytics can be as simple as continuous analysis of consumer spending patterns. When consumers buy from Amazon or eBay or shop for groceries, their purchase behavior is documented, analyzed, and used to generate predictive analytics of future purchases and target affinity promotional materials to their buying preferences. Credit card companies continuously monitor for deviations in purchase patterns and act on these red flags to suspend acceptance of the card pending investigation.

Advanced analytics can be applied to more complex investigations, such as correlating multiple databases, unstructured data, and cross-functional information within and across multiple organizations and levels of government. These tools can provide business intelligence on anomalies, patterns, trends, and operating performance. They can be used to target the areas of highest value or risk for greater scrutiny, and to reduce or normalize controls over areas that do not represent a significant risk.

A 2010 *MIT Sloan Management Review* study of business analytics, which included a survey of 3,000 executives and analysts, found that leading organizations "… put analytics to use in the widest possible range of decisions, large and

small. They were twice as likely to use analytics to guide future strategies, and twice as likely to use insights to guide day-to-day operations. They make decisions based on rigorous analysis at more than double the rate of lower performers."[1]

Analytics can be used in a wide range of areas, including reduction of improper payments, targeting suspicious tax returns for audits, "de-layering" administrative processes and controls, cutting the time for processing benefit claims, and identifying areas for risk management.

Using analytics to reduce improper payments. Data analytics can be used to identify potential improper payments before funds are disbursed, and thereby prevent the payment. Potential benefits are fourfold:

- Greater efficiency, since less time is devoted to error correction and payment recovery, freeing up more time for value-added analysis
- Earlier information to reduce surprises and facilitate root-cause analysis of problems
- Enhanced controls through automated prevention and detection activities and the ability to monitor internal control gaps
- Reduced complexity, which can provide greater insight into how processes operate and can facilitate process standardization and simplification[2]

The following federal agencies are among those already benefiting from advanced analytic tools in preventing improper payments:[3]

- ***The Department of Defense Finance and Accounting Service*** (DFAS) established the Business Activity Monitoring System, an advanced analytic tool credited with preventing more than $3 billion in improper vendor payments.
- ***The Department of Housing and Urban Development*** reported a 72-percent reduction in its improper payments, from more than $3.4 billion in fiscal year 2002 to less than $1 billion in fiscal year 2011, by using analytic tools to match data.
- ***The Social Security Administration*** implemented an analytic tool to identify undisclosed bank accounts and verify bank account balances to determine eligibility and benefit amounts for the Supplemental Security Income program. It expects to save more than a billion dollars in lifetime benefits once the system is fully implemented and estimates roughly $20 in savings for every $1 spent on the process.

As part of the Obama administration's "Campaign to Cut Government Waste,"[4] there are plans to pilot the analytic tool developed by the Recovery Accountability and Transparency Board for Medicare, Medicaid, and other health programs administered by the Department of Health and Human Services. These programs reported more than $65 billion, or 57 percent of the reported $115 billion in government-wide improper payments for fiscal year 2011.

A presidential executive order[5] and the Improper Payments Elimination and Recovery Act[6] also call for "… increased data sharing among federal

The Coast Guard
Using Data to Gauge Readiness for Missions

The Coast Guard relies on its Coast Guard Business Intelligence system (CGBI) as the basis for sound decision-making. Using data from many sources, staff of marine safety and inspection programs can more easily identify trends and problems and better manage marine accident cases. Staff can make sure adequate resources are devoted to port, waterway, and coastal security without neglecting traditional missions such as marine safety and fisheries enforcement. Operational planning managers have found that the system makes data on performance and on the use of resources more readily available to managers at all levels and in general made them more aware of the importance of being in alignment with leadership's direction. "It's fundamentally changed how the Coast Guard thinks about what it's doing," said a program official.

CGBI was created in 2006 from several existing systems and expanded in 2009. It pulls data from 43 separate Coast Guard computer systems that house the data and also connects to dozens of others with useful information, including the Department of Defense and the National Oceanographic and Atmospheric Administration, as well as commercially available data. The business intelligence system turns data into easily accessible information available to anyone who signs in once, with no need for staff to remember multiple, complicated passcodes for different databases. It is updated nightly and tracks results on programs and measures that GPRA requires.

Staff can assess various aspects of programs by slicing and compiling information in various ways to observe patterns and trends. They can use standard sets of reports and create scorecards or do more complex data manipulation and analysis using CGBI "cubes," or multi-dimensional representations of the data. In addition, users can look at their personal readiness, such as their health, dental, and training information, to check whether they have met the requirements to go on a mission. They also can look at unit performance and agency-wide information to view how well their unit is achieving performance goals compared with others. The availability of the information has helped improve data accuracy and validity. With many users able to spot discrepancies, action can be taken to correct data at the source. This information transparency has helped to strengthen the focus on improving performance to achieve the Coast Guard's goals. "Transparency of information breeds self-correcting behavior," said Admiral Thad Allen, former Commandant, U.S. Coast Guard.

Source: Partnership for Public Service, *Data to Decisions: The Power of Analysis,* November 2011.

agencies and programs, and where applicable requires state and local governments and other stakeholders to improve eligibility verification and payment scrutiny." A major capability of data-sharing is the ability to create business and fraud intelligence by linking related information from multiple agencies and sources. Combining data sharing with advanced data analytics can be an especially powerful tool when applied across and between organizations, such as for the oversight of the more than $500 billion in annual federal funds administered by state and local governments and non-profit organizations, ranging from food stamps to Medicaid to education.

Using analytics to target tax returns for audit. Tax preparation software analyzes income and deductions to determine if they fall outside a normal range. It assigns a risk score to the tax return, based on the probability of being audited. With 230 million tax returns and more than $2.3 trillion in annual revenue to administer, the Internal Revenue Service is using advanced data analytics—similar to tax preparation software that lets us know when we may be out of bounds—to target for audit those returns with the highest risk of underpayment. The IRS reported that, as a result, non-productive audits have been reduced by up to 50 percent.

Using analytics to "de-layer" processes and controls. Federal agencies have extensive processes and controls that have been layered over each other through the decades to address particular requirements and problems. Often, these controls are also siloed and segmented, without regard to the cost/benefit relationship.

Advanced analytic tools can help agencies de-layer processes and controls as a means to take a fresh look at how processes work, the benefits derived, the costs incurred, and the alternatives available to help ensure that the appropriate level of controls are in place, but at less cost. There is a potential to take out billions of dollars of costs while improving program delivery and control.

For example, after spending 15 years and more than $1 billion, the Department of Defense attributed its inability to implement a new travel system to having over 70 legacy travel systems and more than 2,000 pages of sometimes contradictory rules and regulations "to cover every possible permutation of travel."[7] Employee travel is an area where, historically, the risk of significant loss is extremely low, and the financial impact is virtually nonexistent, especially in light of Defense's national security mission. Advanced business analytics could help Defense identify significant outliers as an alternative to current excessive processes and controls.

Using analytics to reduce review time for processing benefit claims. The Social Security Administration developed a model that enables it to process a continuing disability payment in less than one second, based solely on information in the application. This analytic tool focuses on applicants for whom continuing eligibility is obvious based on the nature of their disability at the time it was first determined. The tool reduces processing time and cost, while

The United States Navy Using Analytics Tools to Reduce Flight Costs

More than a decade ago, the Navy's Naval Air Forces Command found that the cost of flying planes was rising more than 10 percent annually. The Navy was rich in data but it lacked analytical tools for easily determining the reasons behind the cost increase and for understanding the interconnectedness of its commands.

In 2004, the Navy created the Naval Aviation Enterprise (NAE) to better coordinate activities across nearly 40 major commands and understand how each contributed to the goal of being ready to fly on missions. It enabled the Navy to examine overall the type and amount of training aviators needed, the pilots, planes, and fuel necessary, and the costs for repairs and contracts.

The Navy focused on linking performance to the budget, broke down the disconnected approaches to looking at costs, and made sure performance measures focused on mission readiness, its desired result. Once it assessed costs per flight across the commands, including airplane maintenance, parts, fuel, and training time, the agency could pinpoint areas for cost savings. And, once the cost information was shared with stakeholders—from budget analysts to maintenance technicians to pilots—everyone could understand how to make more fiscally responsible decisions.

The Navy supported the culture shift to information-sharing through strategic communication, advocacy by senior leadership, and an organization-wide training curriculum. The Naval Air Forces Command now knows exactly how much each flight-hour costs and staff can explain to the Chief of Naval Operations what resources it needs. Costs for naval aviation have remained relatively flat since 2005. Officials say that aviators are trained more efficiently and staff is more focused on the goal of being ready for the next Navy mission, whatever it may be.

Source: Partnership for Public Service, *From Data to Decisions: The Power of Analytics,* November 2011.

increasing the quality of service to disabled beneficiaries.[8]

Using analytics to support enterprise risk management. Advanced data analytics can be an integral part of an overall program for enterprise risk management (ERM).[9] ERM concepts dovetail with data analytics because both are premised on establishing a risk appetite and incorporating a governance and reporting framework. This framework in turn helps ensure that day-to-day decisions are made in line with the risk appetite, and are supported by the analytics needed to manage and monitor risk to an acceptable level. The monitoring and predictive capabilities of these tools go to the heart of managing risk and focusing on what's important.

Five Steps to Improving Agency Analytic Capabilities

Improving the strategic use of analytics in government will largely depend on an organization's understanding of how to effectively use data analytics to improve decision-making and reduce costs. The *MIT Sloan Management Review* analytics study found that "getting the right data" was cited as being the top challenge by 20 percent of the survey respondents. Forty percent of the respondents to the survey said the top challenge is the "lack of understanding of how to use analytics."

The *MIT Sloan Management Review* report made five recommendations for improving analytical capabilities that would be helpful to federal agencies in thinking about the way forward.[10]

- **Step 1: Focus on the biggest and highest value opportunities.** What do you want to happen and happen well, and where do you get the most benefit from spending resources?
- **Step 2: Within each opportunity, start with questions and not data**. What do you need answers to?
- **Step 3: Embed insights into business processes to drive actions and deliver value**. This would include the use of trend analysis, forecasting tools, standardized reporting, data visualization (scorecards and dashboards), simulations and scenario development, business process analytics (to include the type of predictive and preventive analytic tools discussed earlier), and advanced statistical techniques. Have you adopted and properly used available advanced analytic tools?
- **Step 4: Keep existing analytic capabilities while adding new ones.** Are you building your capabilities so the focus is on the opportunities of highest value to the organization?
- **Step 5: Use an information agenda to plan for the future**. Are you able to deliver information that is integrated, consistently defined, and trustworthy so that it is widely viewed as a strategic asset and used in managing current operations and in planning for the future?

Final Thoughts

While advanced business analytics are not a panacea for the entire range of difficult fiscal and performance challenges facing the federal government, they represent powerful tools to help decision-makers make the best choices. They can help reduce costs by focusing on areas of highest priority and payoff as a means of right-sizing processes and controls. They can help to better manage the balance between risks and rewards by examining the value of what agencies are currently doing, how they are doing it, and at what cost.

They can play an important role in establishing a performance baseline and in promoting ongoing accountability and control over cost and performance.

While federal agencies may have adopted advanced business analytics to varying degrees, the opportunity and the value of greatly expanding their use is evident today. Applying the power of advanced business analytics to improve government performance and take out potentially billions of dollars of costs could not come at a better time.

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Notes

1. Steve LaValle, Michael Hopkins, Eric Lesser, Rebecca Shockley and Nina Kruschwitz, "Analytics: The New Path to Value," *MIT Sloan Management Review* in collaboration with the IBM Institute for Business Value, October 2010.
2. *A Practical Look at How Government Agencies Can Reduce Improper Payments*, The KPMG Government Institute, March 2011.
3. "Success Stories" in Payment Accuracy, a website of the U.S. government. (http://www.paymentaccuracy.gov/content/success-stories)
4. Vice President Joe Biden, June 18, 2010.
5. Presidential executive order, Reducing Improper Payments and Eliminating Waste in Government Programs, November 20, 2009.
6. Public Law 111-204, July 22, 2010.
7. Statement of David Fisher, Director, Defense Business Transformation Agency, before the House Armed Services Committee, Subcommittee on Oversight and Investigations, April 26, 2010.
8. *One Trillion Reasons,* retrieved from The Technology CEO Council website, www.techceocouncil.org/.
9. Jeffrey C. Steinhoff and Geoffrey L. Weber, "Don't Delay—The Time Has Come to Use the Full Potential of Enterprise Risk Management to Reduce Costs and Enhance Program Delivery," Association of Government Accountants, *Journal of Government Financial Management*, winter 2011.
10. "Analytics: The New Path to Value," *MIT Sloan Management Review*, October 2010.