Business analytics for government

Achieve better outcomes in four key areas
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Introduction
In 2011, over 50 percent of the world’s population lived in cities, and the United Nations projects that almost 69 percent will by 2050, when the population is expected to reach 9.3 billion people. Yet in a survey of government CFOs, only 38 percent thought that they were effective in measuring and monitoring the performance of programs and services delivery. These days, governments must use fewer resources to provide high-quality services—while also coping with increasing crime and terrorism, aging infrastructures and citizen demands for transparency and accountability. IBM Business Analytics solutions for governments help departments define their goals relative to these challenges and use limited resources more effectively to achieve them.

Increasingly, government leaders are recognizing the power of analytics to drive better outcomes. The recent IBM Global CFO Survey shows that CFOs in general and government CFOs in particular view analytics as critical in attaining the best possible outcomes.

This paper focuses on how governments can use IBM Business Analytics solutions to:

• Improve citizen and business services.
• Manage resources effectively.
• Build safer communities.
• Strengthen national security and defense.

Business analytics defined
With IBM Business Analytics software, government leaders use a data-driven, consistent, and real-time framework for defining and achieving strategic goals. Government organizations can integrate data from core financial, operational and transactional systems and provide broad, real-time access to a single authoritative version of spending and performance. By tracking work group, departmental, agency and government-wide performance against goals, government leaders can:

• Better collaborate through one complete view of all activities, programs and budgets.
• Manage and reduce risk by eliminating uncertainty in data and information.
• Improve operational efficiency by aligning strategic goals and desired outcomes.
• Ensure transparency in government by opening up information to all stakeholders.
Improve citizen and business services

Citizens demand high levels of services. With recent economic conditions, however, all levels of government are struggling to deliver the optimal level of service to citizens—and in a way that is cost effective. As a result of siloed compliance initiatives, difficulty maintaining audit trails, disparate and inconsistent information across agencies and the inability to link operational metrics to mission goals or strategic measures of success, government departments also lack the insight needed to improve services.

Your organization can use business analytics to gain insight into mission critical questions, such as:

- How can we provide the services citizens need most, when they need them?
- Are the programs we fund meeting measurable outcomes?
- How can we use data to better understand the needs of our citizens?

IBM offers two solutions to help your department match programs to citizen demands, become operationally efficient and deliver uninterrupted and improved services: citizen services analytics and program performance analytics.

Citizen services analytics

With citizen services analytics, your agency or department can deliver citizen services when and where they are most needed.

You can predict and target the needs of citizens more accurately, and match programs and resources to meet the highest-priority citizen needs. In addition, your organization can position resources to focus on high-priority service areas, and then automate processes for more efficient and effective service delivery.

Within the solution, dashboards show a single, complete view of goals and performance, allowing you to manage and reduce risk by identifying issues early. Operational efficiency is improved with timely access to accurate information when and where it’s needed.
Program performance analytics

Deliver a strategic view of programs and budgets from the top level of government to the agency staff level with program performance analytics. IBM Business Analytics solutions for program performance help ensure that your organization’s programs and services meet the goals intended.

Immediate and easy access to consistent information lets staff conduct comparative analysis, perform ad-hoc queries and better gauge overall performance. Departments and agencies can also improve financial and operational governance, reduce risk and increase compliance with intergovernmental reporting requirements.

As a result, government organizations can make more timely decisions, improve accountability and strengthen financial performance.

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Analytics in action: City of Dubuque

The City of Dubuque was committed to reducing its impact on the environment while still delivering the services its residents needed. The city and its citizens had limited insight into their water consumption and management, and as a result the city struggled to reduce water costs and its overall consumption footprint. Without accurate information on resource distribution and consumption, and a way to enlist the help of its citizens, the City found it difficult to act on its commitment to sustainability and to alter citizen behavior.

To reduce water usage, the City used IBM Business Analytics and cloud computing software to build a prototype platform for real-time sustainability monitoring that provided an integrated view of the city’s energy management. Monitoring water consumption every 15 minutes, the system securely transmitted that anonymous data along with information on weather, demographics and household characteristics to the cloud, where it was analyzed. The system also quickly and automatically notified households of potential leaks and anomalies—and provided citizens with a better understanding of consumption patterns.

The City decreased water utilization during its pilot project by 89,090 gallons among 151 households over nine weeks—a 6.6 percent reduction. It also anticipated aggregate annual community-wide water savings across 23,000 households to be 64,944,218 gallons, or US $190,936, and increased water leak detection by participating citizens at a rate of 8 percent compared to 0.98 percent citywide, a 716 percent increase.
Analytics in action: Alameda County Social Services

Like many social service agencies, Alameda County Social Services Agency (SSA) was forced to do more with less. The agency needed a centralized and unified way of storing and analyzing all the data related to its clients and the programs in which they participate.

The agency selected IBM Business Analytics software and developed a platform called the Social Services Integrated Reporting System (SSIRS). It had the ability to drill into data at any desired level of granularity, and provided a view of clients that revealed their interactions with a variety of agencies and services. Over six months, Alameda County integrated SSIRS with separate data sources related to welfare, child welfare, services for the elderly and disabled, probation and the state’s welfare benefits and welfare-to-work programs. At the end of 2009, it was used by 1,200 employees in various departments.

After implementing IBM Business Analytics software, Alameda County SSA lowered costs while also improving the productivity of case workers, who are able to spend more of their time providing social services. The agency realized US $11 million in direct savings through fraud and waste reduction, and gained real-time understanding of case and program status to find the best assistance programs for each client.

Manage resources effectively and do more with less

Goverments today face more challenges than ever: balancing revenue short falls with a greater demand for services; outdated operational systems; aligning spending with outcomes and measuring and monitoring performance—just to name a few.

Effective governance is making sure that every department balances its budget, reduces costs, prevents fraud and abuse and complies with strict financial reporting requirements. With IBM Business Analytics software, your department or agency can:

- Create an integrated process for budgeting and financial operations that includes enterprise planning, budgeting and consolidation capabilities.
- Use flexible planning to realign your budget as external conditions change.
- Eliminate “best-guess” project milestones, accelerate project cycles and improve communication.
- Involve the entire organization in the planning process and connect strategy to plans, targets and operational objectives.

IBM offers three analytics solutions to help your department or agency improve budget management, efficiently manage operations and recover and track revenue.

Budget management analytics

In the public sector, budget limits must be adhered to, and the demand for results against diminishing budgets is stronger than ever. Closer tracking of spending against budget helps officials plan programming based on projected budget, identify critical uncosted amounts and deliver against budget goals. And to demonstrate results, program successes must be clearly linked to budget allocation, spending, revenues and resources.
Budget management analytics improves visibility into and across all functions of government—at the agency and departmental level—to tie program success to budget allocation, and increase organizational responsiveness and effectiveness. This can help governments:

- Consolidate data across functions and deliver a strategic view of revenue streams, budgets, costs and expenses government-wide or at the agency and departmental level.
- Plan programs and tasks more predictably and monitor progress based on strategic goals.
- Use collaborative budget preparation and execution: ensure that all staff members see the same information, understand the strategy and know their roles in executing it.
- Match budget requests to funding and tie spending to results.
- More effectively measure and monitor financial performance across agencies.
- Use robust financial reporting capabilities to support compliance with internal and external requirements.

With analytics, departments and agencies can more easily achieve a transparent budgeting process and demonstrate communication and good governance to citizens, partners and regulators.

### Analytics in action: Australian Hearing

Australian Hearing is a statutory authority and part of the Australian government’s Department of Human Services. It provides hearing tests, hearing aids and related services for people across Australia. The organization wanted to adopt a “retail-like” business model, giving the managers of its 115 hearing centers more control of finances and operations and using key performance indicators (KPIs) to help them focus on the right goals.

Australian Hearing uses an IBM Business Analytics solution to integrate data from Oracle Financials and the organization’s customer relationship management and appointments systems. This solution allows daily reporting on KPIs, helping local managers make better decisions and manage their own business units more effectively. It also automates financial reporting—replacing a five-day manual process, and cuts data-loading times from four hours to less than one minute.

Australian Hearing expects the solution to deliver a full return on investment within 30 months.

### Operational analytics

Although you may be forced to juggle several budgetary levers during times of economic instability, governments can improve operational outcomes with operational analytics. By using analytics throughout your decision-making lifecycle, you can continuously refine the decisions you make and the strategies that you use to make confident decisions.

IBM Business Analytics solutions for managing operations are designed to meet you where you are and provide value. They enable your department or agency to:

- Predict and help prevent outages in key public services.
- Gain critical insights into management of operational resources.
- Help to reduce operational costs linked to handling fraudulent activities.
- Lower operational costs for program execution.
- Manage supply chains for more cost-effective procurement of goods, and prevent improper payments for goods and services.
- Retain top performers by identifying and monitoring predictors related to employee satisfaction.
Operational analytics shifts your organization away from a broad long-term planning approach and instead helps it become more agile in its ability to respond to each constituent or service issue—this is operational excellence. An operationally excellent department or agency ensures that all of the internal people, assets and processes are aligned and optimized to deliver the exact service or response that meets citizens’ needs. An agile government organization also modifies its operations proactively to ensure that potential operational issues are prevented and future constituent needs are met.

Analytics in action: The British Columbia Egg Marketing Board

With a range of responsibilities including quota management, capacity planning, inspections and biosecurity regulations, The British Columbia Egg Marketing Board (BC Egg) realized that it needed to make smarter use of operational data in order to provide a better service to its stakeholders, including egg producers and the general public.

Building on an IBM Business Analytics platform that was initially introduced for financial planning and budgeting, BC Egg created a range of solutions to both analyze operational data and access historic data from its legacy system. One solution allows Producer Liaison Officers (PLOs) to collect farm inspection data and perform bird counts electronically using tablet PCs. Another will soon help to track producer flocks and their eggs through the entire production and distribution process.

As a result, the organization cut its basic farm inspection workload by 66 percent, and reduced the budget cycle from two months to less than two weeks—a 75 percent improvement. BC Egg also increased overall productivity, saving around CA $100,000 per year in additional staff hiring.

Analytics for tax and revenue management

Recovering owed taxes is crucial—doing so compensates for other declining revenue sources and mitigates downstream impact, such as leaving municipalities with reduced or no funding.

Your organization can use IBM Business Analytics solutions for tax and revenue management to:

- Identify the propensity of citizens to comply with tax requirements and improve overall tax payment.
- Automate and fast-track the processing of legitimate tax returns.
- Help reduce tax and revenue deficits resulting from fraud and defaults.
- Help prevent social services waste fraud and abuse, and guard against improper payments.
- Increase accountability and compliance with tax laws and regulations.
- Recognize revenue sources in a timely and efficient manner.

In some cases, nonpayment of taxes may be related to individuals who either forget to pay or don’t realize they owe, but it may also be related to intentional fraud. Once you’ve identified and segmented citizens based on their propensity to pay, you can then prioritize your collection processes according to the greatest areas of opportunity. For example, your strategy may be to target first those citizens who owe the most. Then you can follow up with those citizens who intend to pay but missed the deadline, flag those citizens who are likely to file future fraudulent returns and begin the audit process for full-on tax evaders.
Build safer communities

Law enforcement agencies must also deliver the highest level of safety and security—regardless of shrinking budgets and fewer officers. In light of these constraints, many agencies are turning to analytics to help combat crime and gather intelligence.

Using analytics to forecast and report on when and where crimes are likely to occur, law enforcement resources can be deployed to expected hot spots. Analysts can apply complex statistical models to a database of crime reports, arrest records and 911 calls, and produce a color-coded, geographic map that anticipates criminal activity across a metropolitan area. This forecast then acts as a guide for crime-fighting strategies. In addition, law enforcement agencies and civil authorities can gain valuable insights into the nature of crimes.

Analytics for crime prevention and prediction

With analytics for crime prediction and prevention, agencies can see trends and patterns in crime data, giving them the insights to:

- Preempt crimes with more effective deployment of law enforcement resources.
- Gain more insight from crime and incident data, including text-based sources like incident reports, witness statements, email and social media content.
- Monitor crime activity using real-time dashboards and deploy law enforcement officials where needed.
- Share information across departments.
- Monitor the effect of cross-agency decisions on future crime rates.
- Accurately position new infrastructure investments for delivery of public safety agendas.

Analytics in action: SKAT

SKAT, the Danish tax and customs agency, saw an opportunity to significantly simplify the collection of more than €8.5 billion in arrears from over 600,000 citizens and businesses (2009 figures). If it could find a way to segment the debtors into groups based on their ability and willingness to pay, it could tailor its collection processes for each group and significantly reduce workload for the collection team.

SKAT is building a solution that uses IBM Business Analytics technologies to assess every debtor against a statistical model that predicts their probable payment behavior. Based on the scores generated by the model, the debtors are sorted and prioritized into different collection processing channels.

In most cases, a few letters, emails or text messages will probably be enough to remind a debtor to pay. In the harder cases, they may require a personal visit or even the use of surveillance. By using the right methods on the right people, the agency can substantially increase the proportion of automated collections and reduce the time and effort needed to settle the arrears.

The challenge was to find a way to automatically predict the likely behavior of a given debtor, and then assign them to a specific “track” that would handle the collection process in the most appropriate way.

In initial runs, the IBM Business Analytics predictive models are already proving to be 70 percent accurate—in line with results achieved by most banks. It is estimated that the IBM solution will reduce the total workload for the collections team by 18 percent.
When law enforcement officers have timely, relevant information, they’re more effective—and safer. When information is not merely descriptive but predictive, it results in scenarios like these:

- A precinct captain or other commander sees that a pattern of shootings suggests increased gang violence in a particular area, and deploys enough patrol staff to combat it.
- Crime analysts or detectives identify behavioral characteristics common to several apparently unrelated cases, and develop more effective action plans to uncover leads to solve them.
- An officer, knowing that a certain type of armed robbery in a certain area is likely to escalate into an assault, gives that situation greater priority and uses extra caution in dealing with it.
- Your agency’s internal affairs staff identifies at-risk behavior among employees and offers appropriate early intervention.

By using IBM Business Analytics solutions, law enforcement agencies can anticipate what types of intervention will be needed, and where—and make the best use of your agency’s resources.

**Analytics in action: Memphis Police Department**

IBM Business Analytics plays a key role in the Memphis Police Department’s Real Time Crime Center, which generates statistical and geographic data to help the department effectively identify, target and better respond to crimes.

The department turned to IBM Business Analytics software to chart and analyze crime patterns and develop effective strategies for reducing crime rates while optimizing police manpower and resources. Each day, the data repository is updated with new reports flowing in from the field, providing the Memphis Police Department with near real-time crime analysis capabilities.

Since 2006, serious crimes in Memphis have dropped by 30 percent, and violent crime has dropped by 15 percent. The Department’s Felony Assault Unit has also experienced an increase in solved cases, from 16 percent to nearly 70 percent.

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**Strengthen national security and defense**

Sharing and using information from disparate sources within and among defense and security agencies is crucial to safeguarding citizens and to helping maintain peace in critical parts of the world. Whether it’s peacekeeping missions, defense readiness, or ensuring the security and integrity of borders, national security and defense is critical.

Business analytics software delivers comprehensive solutions that enable a seamless, integrated exchange of decision-quality information among all levels of government. By providing decision makers with consistent, accurate and trusted information, business analytics allows immediate insights into mission, financial and operational performance; deeper analysis of trends and patterns; and clear foresight for planning and allocating resources.

For example, government organizations can use business analytics to gain insight into specific concerns related to security and defense, such as:

- What are the best ways to protect our national borders?
- How can we manage multiple points of vulnerability?
- What are best ways to prepare our armed forces and measure the effectiveness of their missions?
- How can we link our equipment and supplies to improve defense readiness?
- What are the most effective ways to manage our security and defense budgets?

IBM offers two business analytics solutions that help governments manage performance and improve operational efficiency: analytics for customs and border security and analytics for defense readiness and operations.
Analytics for customs and border security

From deterring and preventing terrorist attacks to safeguarding national borders, governments must be prepared and ready to protect their citizens, freedoms and the nation. Unifying national security efforts—and garnering citizen confidence—requires strong, cohesive performance management strategies. Like many government entities today, national security organizations tasked with managing the internal security of the nation are using business analytics solutions to manage under a pervasive lack of decision-quality data, continuing budget pressures, and the public’s stringent demands for transparency and accountability.

With IBM Business Analytics solutions for customs and border security, organizations responsible for managing national security can:

- Improve border safety by targeting passenger and vehicle searches.
- Position infrastructure and resources for greater effect on public safety and security.
- Better predict the likelihood of suspicious behavior at border checkpoints.
- Determine which airline passengers should be investigated more thoroughly.
- Improve information transparency across departments and help ensure cooperation among different levels of governments.
- Increase threat prediction and prevention and expedite the flow of people and goods while intercepting dangerous people and illicit or hazardous items.

By using analytics, governments can make optimal use of inspection staff, increase detection rates and ensure better protection of the country and its citizens.

Analytics for defense readiness and operations

Readiness is the main goal of any defense agency and also one of its greatest challenges. Readiness across the operational breadth of defense agencies means troops are well-trained and well-equipped to support their missions.

Readiness demands operational efficiency throughout the entire organization, and that means defense organizations must be able to understand both operational requirements and the budgets in place. For example, defense agencies must be able to track troops while managing suppliers, material and distribution. That requires uniting disparate information to get a complete picture of operational requirements and to ensure the highest state of readiness.

With IBM Business Analytics solutions for defense readiness, military and defense organizations can:

- Improve operational effectiveness while reducing costs and waste.
- Measure, monitor and analyze service-level assets.
- Monitor performance for real-time decision support.
- Locate and track required material and armaments for timely delivery.
- Link people, equipment, supplies, training and ordnance together to support effective national defense.

With integrated plans, business intelligence and performance metrics, your defense organization can dramatically improve its understanding of the current state of readiness and improve its ability to make timely, informed decisions about people, equipment, operations, budgets and logistics.
Analytics in action: The Spanish Ministry of Defence

The Spanish Ministry of Defence wanted to automate regular tasks for the General Directorate of Personnel (DIGENPER) and in the General Directorate of Training and Recruitment (DIGEREM)—without waiting for assistance from IT.

The Ministry selected an IBM Business Analytics solution to develop an information system, independent of the systems currently operational in the Ministry of Defence’s Human Resources Department, which provides the Directorate of Personnel access to personnel and salary information. Previously, there were no specific reporting solutions, only scheduled reports in the hosting environment where the operational infrastructure is housed.

As a result of using IBM business analytics, personnel and deputy managers use dashboard indicators to aid decision-making. They also use the solution to access historical information online, generate reports, respond to questions from other government departments and carry out special studies.

Conclusion: Achieve better outcomes with IBM

In climates of shrinking budgets and resources, government organizations need to see the big picture—the relationships, the connections, the direction—as well as the details to make informed decisions and improve outcomes.

With over 40 years of experience in analytics and a proven, industry-based best practice approach, only IBM offers:

- A complete range of integrated capabilities including reporting, analysis, dashboarding, scorecarding, content analytics, “what-if” scenario modeling, predictive analytics and planning, budgeting and forecasting.
- An open enterprise-class platform to cost-effectively deliver complete, consistent and timely information (can be historical, real-time and predictive) to decision makers throughout your organization.
- Packaged reporting and analyses based on proven best practices, with a comprehensive portfolio that covers workforce, customer, finance and supply chain, and that can be easily adapted for specific industries.
- The ability to leverage IBM’s full technology stack—including workload-optimized systems and leading information management capabilities—for flexible implementation and delivery of trusted information.
- Solutions that scale well from the desktop to the enterprise, including the only complete, integrated solution purpose-built for midsize organizations.

Many public sector organizations rely on IBM Business Analytics solutions to ensure efficient spending and excellent results. Analytics software and processes help employees plan, understand and manage budget, program and service performance.

IBM understands how critically important business analytics can be to government organizations. Responding quickly with better decisions lets government organizations have an impact when and where it matters most. We are dedicated to helping you grow a culture of analysis, the cornerstone of an accountable, cost-effective and productive public sector.

For more information on business analytics software for government, please visit ibm.com/software/analytics/government.
About IBM Business Analytics
IBM Business Analytics software delivers data-driven insights that help organizations work smarter and outperform their peers. This comprehensive portfolio includes solutions for business intelligence, predictive analytics and decision management, performance management, and risk management.

Business Analytics solutions enable companies to identify and visualize trends and patterns in areas, such as customer analytics, that can have a profound effect on business performance. They can compare scenarios, anticipate potential threats and opportunities, better plan, budget and forecast resources, balance risks against expected returns and work to meet regulatory requirements. By making analytics widely available, organizations can align tactical and strategic decision-making to achieve business goals. For further information please visit ibm.com/business-analytics.

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