



Data Analytics and Budget Formulation

Federal Chief Financial Officers (CFO) face increasing pressure to do more with fewer resources. Caught in the crosswinds of chronic budget constrictions and increased accountability, CFOs and their budget teams are often constrained by stagnant staffing levels, inflexible decision-making processes, antiquated data systems, and modernized systems that magnify data quality issues. Data analytics and automation can help relieve these pressures by streamlining the budgeting process with greater efficiency. The application of analytics with financial and operational data can also provide CFOs with insights to influence the operational planning decisions which define the line items of budget.

Data analytics can streamline the budget formulation process through automated data consolidation, integration, and restructuring.

Fundamentally, data analytics can have a transformative impact on the ability of Federal budget staffs to plan budgets by reducing manual work through basic automation and improved analysis. Few Federal CFOs and budget teams operate with a fully mature enterprise financial system capable of accommodating every aspect of the budgeting process. Many teams remain reliant on the manipulation of spreadsheets, which can carry significant risks from user errors and be difficult to manage and replicate. Simple investments in analytics technology and incremental adoption can yield efficiencies and create opportunities for advanced reports and analysis. For example, in 2015, a budget team working for a national security agency needed to build a budget to support over 250 programs spread globally at multiple locations. The team engineered automation tools using the organization's existing software portfolio to collect and consolidate these budgets. Data analytics

using the centralized budget data enabled the CFO to conduct analysis, track performance metrics, and produce customized reports.

Data analytics offers much more than merely automating the mechanics of budget formulation. CFOs can expand their influence beyond the books by developing data driven solutions to project costs, analyze budget performance, and prioritize the allocation of funds to maximize the operational impact of the budget. Data from multiple sources can be integrated, and through visualization analytical capabilities, a more complete picture of the organization budget from initial build to execution emerges. This information brings the CFO and budget teams enhanced decision-making power and clarity in the direction those decisions should take.

Data analytics can identify savings and efficiencies through analysis of execution data.

In a perfect world, CFOs would have sufficient understanding of requirements to plan exactly for each line item. But there are a lot of variables, often outside of CFOs' control, that limit the effectiveness of resource allocation and the ability of the stakeholders to operate with maximum efficiency. As a result, significant amounts of expired funds are often returned to the Treasury because unliquidated obligations were never identified or there was insufficient time to repurpose the money. Data analytics offers CFOs solutions to mitigate this problem in the year of execution and take corrective measures for planning. Analytics can drive dashboards and produce customized reports to identify and prioritize where funds are available. A US government agency used data analytics to automate the creation of customized reports to track the status of funds based on the ages of commitments and obligations. After several weeks, the team discovered millions of unused dollars by tracking and investigating the largest sums. Analysis of the root causes revealed process gaps, which allowed manual data entry errors to go unchecked. Data analytics revealed these errors and prompted corrective action, which yielded savings in the execution year, and improved the effectiveness and transparency in future budgets.

Analytics can use models to forecast costs for complex operational requirements

Identifying and predicting the costs of critical operations is not always a straightforward process due to a number of external variables. In these circumstances, CFOs can leverage data analytics to run cost models. For example, a government agency was required to plan costs for operations that were highly dependent on time, weather, and political events. Using prior operational data to determine the probability of costs by month, the team built a "first of its kind" costing model that utilizes a Monte Carlo simulation to project costs with greater accuracy, as well as stress test the budget to identify the potential risk of a funding shortfall. CFOs may use Monte Carlo simulation or other cost modeling and analytical tools to approach operations under constrained budgets. Such tools can enhance the information available to the CFO and provide confidence in decisions that will require the direction of limited funds to those areas that sustain critical capabilities and maintain a level of operational readiness. Because these cost modeling and analytical approaches can cut across budget lines—fuel, maintenance, parts, and manpower—they provide greater granularity, traceability, and scenario analysis to CFOs as they consider making budget decisions that affect operational requirements. Additionally, such analytical techniques offer flexibility and capability to address a wide spectrum of unique organizational operating models where CFOs may rely on external variables for their budget forecasts. An example might be projecting user fees for federal services like processing passports. While models are not a perfect forecasting tool, they can provide insights to enable CFOs to understand potential worst-case scenarios, understand the most optimal allocation of budgets to deal with the most likely conditions, and how to shift when dependent variables are triggered.

The integration of operational and financial data can improve the efficiency of operations and budget planning

Armed with data analytics, CFOs can provide more than just financial transactions and balances by also driving and informing operational decisions. Collaboration and communication between the CFO and the operational managers can be mutually beneficial as they weigh performance and costs to determine the most efficient allocation of resources and return on investments. The integration of cost analysis and operational performance data may reveal insights into the most effective and transparent resource allocation and requirements prioritization. In 2015, we worked with one client focused on a certain subset of military operations to integrate predictive analytics, risk modeling, and affordability into a tool to assess requirements and compare technical capabilities. This enabled the organization to direct limited resources to the highest priority technical gaps that demonstrated favorable operational and financial returns on investment. While not all CFOs will have access to operational data, recognizing the existence and potential of the vast amounts of unused data is a starting point for collaboration, yielding results in the short term and incrementally building support over time.

Conclusion:

The area of data analytics and the ability to impact the effectiveness of CFOs and their budget organizations is no longer a frontier opportunity. The amount of data available to CFOs to analyze, and the imperative to analyze it, is growing exponentially. Capabilities to improve data maturity are readily available for CFOs to leverage, improving the efficiency of their staffs and the effectiveness of their planning decisions in the face of this onslaught of data. Finally, the CFOs should use data to reveal insights that can contribute to operational planning decisions, which ultimately drive their budgets. The convergence of data from every step of the operational process can lead to more effective, flexible, and transparent financial management. Finally, the solution does not have to be a large, billion dollar investment in an enterprise system. There are many examples of the power of incremental deployment and adoption of data analytics within the CFO organizations across Federal agencies. CFOs should view data analytics as a critical first step in performing their budget formulation while facing reduced staffing, increased workload, and growing pressure to improve decision quality.

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