Reducing Wasteful Government Spending: An Empirical Study on Rebaselining in U.S. Federal Government Technology Programs

Introduction

In United States and across much of the European Union, the topic of “wasteful” government spending and the ways to reduce such spending has been a source of much recent debate in political and media circles (Pang et al. 2016, McKinsey 2017). In U.S., one particular aspect of government spending that has received bipartisan congressional scrutiny is the federal spending on its technology programs—i.e., enterprise-wide technology initiatives comprising of interrelated application development and maintenance projects that are carried out by the federal government to improve its operations and deliver essential services to the public (Government Accountability Office Report 2016, Gregory et al. 2015).

The execution of every federal technology program is tracked against a “baseline”—i.e., an aggregate plan representing the original budget, schedule and scope of the program that is typically approved by the stakeholders in the program prior to its execution (Kerzner 2013). A central criticism of federal technology programs is that such programs are often rebaselined multiple times over the course of its execution, resulting in wasteful spending on such programs (Yaraghi 2015). Toward this end, a Government Accountability Office report (GAO 2008) finds that baseline changes are quite common across federal technology programs with more than 50% of all such programs being rebaselined at least once and more than 25% of the programs being rebaselined twice or more.

With increasing bipartisan congressional scrutiny on federal spending in technology programs and continuing debate in the popular press about their effective execution, understanding the drivers of baseline changes in federal technology programs is a consequential and contemporary line of inquiry. While the scope of a program has often been attributed as a driver of baseline changes, we have a limited understanding of the execution factors that may affect this relationship. We note that a federal technology program can be viewed as a collection of interrelated projects, wherein each project within a program has a certain set of measurable outcomes that contribute to the specific goals of the program. We
focus on the moderating effects of three execution factors in federal technology programs—namely, the *granularity* of the program which represents the progressive componentization of a program into smaller units of work or activities beyond the project level, the *program management competency* as represented by the experience and qualification of the managers within the program, and the *execution methodology* pursued in the program (i.e., waterfall, agile, or hybrid).

**Data and Method**

We collect detailed archival data from the federal IT Dashboard, a website maintained by the U.S. federal government to oversee the performance of its technology programs. Analysis results are based on a sample of 244 federal technology programs across 19 federal agencies.

**Results**

We find that the scope of a federal technology program is positively associated with the number of baseline changes. Our results further suggest that increasing levels of program granularity and program management competency attenuate this positive relationship. Surprisingly, the execution methodology does not have a moderating effect on the relationship between the scope of a technology program and the number of baseline changes. Instead, we find that agile methodology is associated with a higher number of baseline changes compared to waterfall or hybrid methodology. Additional analysis illustrates that significant savings in tax payer contributions can occur with the reduction in baseline changes in programs of greater scope by increasing their levels of program granularity and program management competency.

**Managerial Implications**

From a policy standpoint, our research highlights the importance of representing the number of baseline changes as an important in-process metric for evaluating the execution of federal technology programs. Our findings emphasize the need for federal agencies and contracting firms to invest greater efforts in granularizing a program and in identifying managers with greater levels of program management
competency when program scope is high. In sum, our study responds to growing calls in the OM literature for research on public sector operations (e.g., Lee and Tang 2017, Tang 2016, Joglekar et al. 2016, Privett and Erhun 2011).

References