Enterprise Project Management: The State of the States [1]

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Abstract

This study contributes to our understanding of enterprise project management with original research on U.S. state governments. A multi-method research design is used to uncover context on reforms and strategies related to major Information Technology (IT) acquisitions. Findings from 33 states show that the rise of enterprise project management in U.S. state governments can be attributed to a combination of government modernization, disappointing results, and growing emphasis on results-based accountability. Ultimately, government modernization exposed weaknesses of existing planning and management routines that had traditionally been decentralized and ad-hoc. As a result, reforms included the creation of Enterprise Project Management Offices (EPMOs), adoption of industry standards, and establishment of project management guidelines. States have taken steps to centralize planning with state and agency leadership active in strategic alignment, but project delivery remains very decentralized with agencies retaining considerable discretion in managing their projects.

Introduction

For centuries, project leaders have used various management approaches to deliver high-quality products quickly and efficiently. Traditionally, the focus has been on the execution of single projects. However, during the last few decades, increasing emphasis has been placed on fostering effective project management throughout an organization, while also meeting greater demands for external accountability (Dinsmore and Rocha, 2012). Therefore, the Enterprise Project Management Office (EPMO) has gained popularity as leaders strive to improve organizational performance with better project management and build stronger governance structures. Specifically, EPMOs have been created to support strategic alignment, knowledge management, policy development, oversight, and managing change as new processes are implemented, among other things.

Although the scope of EPMO operations can vary widely among organizations based on their unique needs, the primary purpose of an EPMO is to provide direction to units within their

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organization that manage projects. For example, organizations that engage in projects to acquire assets to deliver services, such as governments, may emphasize strategic alignment to ensure they are making the right capital investments. In contrast, contractors delivering these assets may stress the importance of disciplined cost management to ensure profitability. Furthermore, some organizations may not have formally established an EPMO, but have an EPMO "presence" in the form of recognized hierarchy and documented processes without a centralized office (Dai and Wells, 2004).

The aim of this study is to disseminate knowledge on EPMO operations in the public sector. Specifically, the paper chronicles the rise of enterprise project management in U.S. state governments for major Information Technology (IT) acquisitions, highlighting best practices and lessons learned along the way. Attention to this area is instructive for a few reasons. First, state agencies need complex and expensive IT systems to perform their operations. Second, IT projects have become notorious for project failures, missed deadlines, and busted budgets (Flyvbjerg, 2017). Third, state governments are large organizations that must prioritize technology investments across a wide range of operations and establish management structures and routines to deliver these projects efficiently.

Findings from 33 state governments show that enterprise project management is widespread and eclectic but relatively new as a formal institution. Specifically, all but four states have formed an office, but their operations vary significantly, and half were established within the last 10 years. The primary motives for establishing EPMOs have centered on strategic alignment and the need to improve project delivery via knowledge management and use of industry standard practices. Ultimately, the experiences of the states provide a helpful assortment of best practices and lessons learned, but major work remains for many states in terms of embedding project management reforms within existing work routines.

Enterprise Project Management

Before discussing the rise of enterprise project management in U.S. state governments, some key terms and concepts will be clarified in the context of this operating environment. In U.S. state governments, the executive branch is responsible for preparing budgets for legislative approval and implementing laws that are passed. The Governor appoints a Chief Information Officer (CIO) to formulate and implement a statewide technology plan, which is then supported by the EPMO. For example, an EPMO can support strategic alignment by working with state agencies to develop their spending requests for capital investments, creating priority ranking systems, and assisting the Governor and state legislature in their budget negotiations. Of course, the involvement of each

office varies, and agencies have CIOs with decision-making authority, but statewide technology planning runs through the state CIO one way or another (National Association of State Chief Information Officers, 2013).

Once agency projects are authorized, the EPMO can promote efficient project delivery through policy development and oversight. In U.S. state governments, EPMOs have been responsible for policy development by selecting industry standards, developing project management guidelines, and periodically revising them. The EPMO issues a set of project management guidelines to state agencies. However, project delivery is decentralized, with these guidelines being optional in many states. Regarding project oversight, many EPMOs conduct portfolio reporting and monitor progress toward meeting project objectives for state leadership. In some states, portfolios are expansive whereas in others attention may be focused on a limited number of critical projects.

Finally, the core function of knowledge management has involved both the cultivation of individual skills and organizational learning. Regarding the development of individual skills, EPMOs have provided training, education, consulting, and avenues to professionalization for state employees. As for organizational learning, EPMOs have attempted to serve as knowledge brokers by managing the lessons learned process. However, they have encountered the well-documented challenges of moving from lesson identification to organizational learning (Duffield and Whitty, 2015). Therefore, they strive to purposefully embed learning into existing work routines. Having described some of the core functions of enterprise project management in state government, the next section briefly explains the research methods used for the study.

Research Methods

The study used a multi-method design involving document review, surveys, interviews, case studies, and webinars. First, public documentation was gathered from the states, such as their strategic plans, organizational charts, project management guidelines, performance reports, and policy memorandums. However, the document review found that many states did not have publicly available artifacts, some of the available documents were dated, and the content was often vague and open to interpretation. Therefore, an electronic survey was created to collect data on operations.

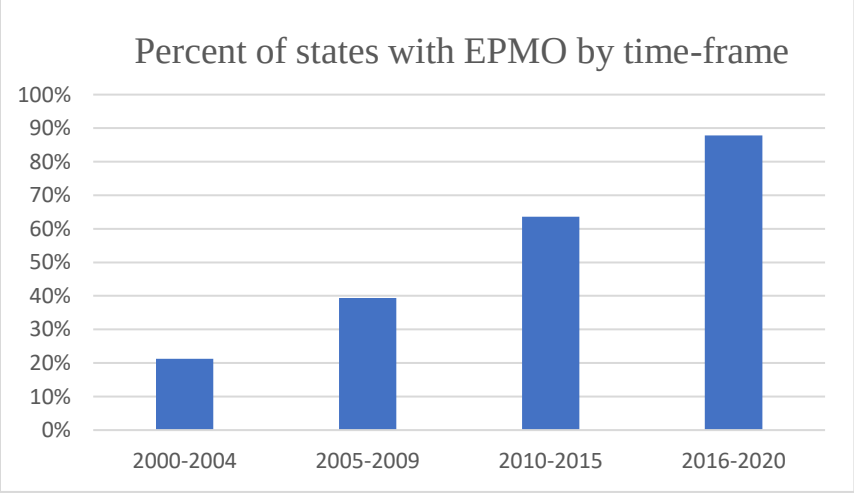
To incentivize response to the survey, the author offered participants a copy of research findings and an invitation to a collaborative webinar. To build trust with research participants, who are predominately EPMO Directors, they were contacted first through the physical mail using official University letterhead and notified they would be sent an electronic survey on a specific date and

time. The survey yielded responses from 31 states and data was subsequently collected through email from two additional states. To gather more context on survey results, follow-up interviews were conducted with 12 states. Next, a few case studies were conducted to chronicle the origin and evolution of state EPMOs. Upon completion of the study, the webinar was held with participating states. During the webinar, several EPMO Directors expressed interest in collaborating moving forward, and a few additional webinars have been held since then.

State EPMO Operations

The rise of enterprise project management in the states was driven by the triad of government modernization, disappointing results, and the growth of results-based accountability (Grandage 2021). Over the last few decades, technology spending in state government has grown considerably as legacy systems were replaced and new ones were added. However, state governments were simply not prepared to plan or implement major IT projects in the early phases of government modernization. As a result, high-profile failures were in the headline news, with time and cost overruns being the norm (Grandage 2021). In reaction to these issues, state governments began reforming technology planning and management statewide. Although the states had an "EPMO presence" predating the establishment of their EPMOs, Figure 1 shows the EPMO being a relatively new formal institution within state government. [2]

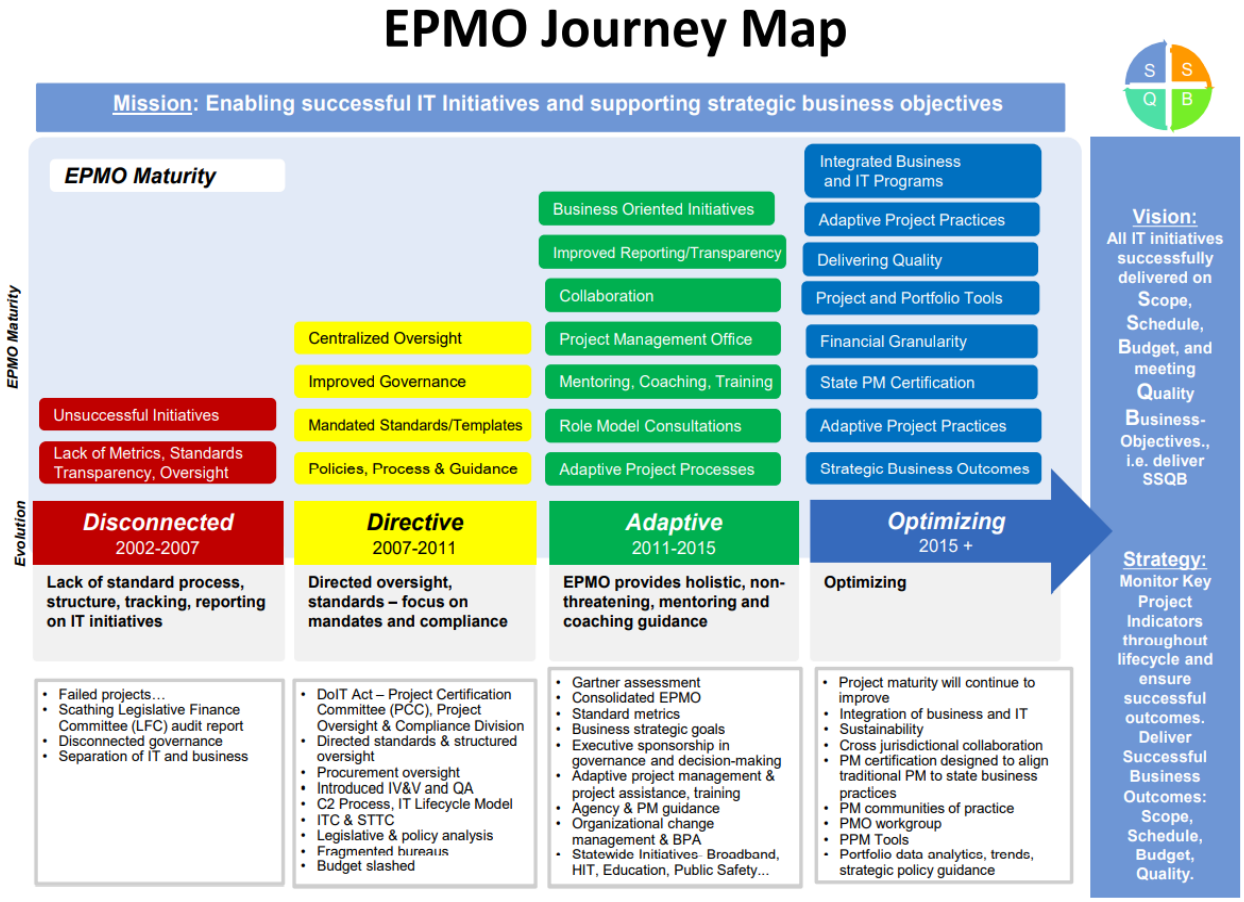
Figure 1: EPMO Chronology



[2] Note again that operations differ significantly among the offices, and some do not use the term EPMO. However, after analyzing operational data from the survey, the term EPMO was most typical and judged to be appropriate to describe states that have an EPMO presence but operate under different names.

To help illustrate the evolution of an EPMO, Figure 2 provides an EPMO Journey Map from New Mexico. It is important to emphasize that these challenges are typical, and the state should be recognized for their transparency and efforts to document their history with the public. As the Journey Map shows, the office has evolved from identifying as controlling to supporting, with early efforts focused on establishing standards and more recent ones emphasizing "holistic, non-threatening, mentoring, and coaching guidance". During interviews with officers from other states, they described the evolution of their EPMO in very similar ways – evolving from a control to management orientation.

Figure 2: New Mexico EPMO Journey Map [3]



[3] Retrieved from State Of New Mexico EPMO PM Express The Quick Reference Guide for managing your way to Successful Technology Projects (FY16) (nm.gov) on September 6, 2022.

Strategic Alignment. As technology spending took on greater importance to state budgets, it challenged existing planning and management routines. Traditionally, technology planning had been decentralized - each agency typically went their own way, without any formal statewide coordination. As a result, state leadership knew relatively little about agency IT investments, other than the fact that they were problematic and distracting to issues of greater political importance. Therefore, states put reforms in place, requiring their Governor, Chief Information Officer, and agency leaders to better coordinate planning and budgeting. For example, as the Director of one EPMO explained, prior to reforms in their state, agencies did not typically include formal cost-benefit analysis (CBA) or other standardized information to aid comparisons. In speaking to the results of the reforms, the officer shared that:

> The results we've observed from agencies have been positive for the State. Key stakeholders are more confident in their financial decisions, they have a much better understanding of the costs and expected benefits, and the artifacts produced communicate to all stakeholders a consistent message of why the initiative is necessary and documents a clear project scope. The business case and CBA serve as justification. By requiring these artifacts, agency stakeholders must invest the effort to examine the problem thoroughly and justify their decision based on business value, costs, risks, security, and compatibility. This is something that many agencies simply didn't take the time do before.

Furthermore, at a very basic level, having the EPMO involved in budget approval can help ensure that all technology costs are factored into legislation. As one Director shared, having an additional set of eyes on the numbers helped them catch a simple, but potentially costly mistake:

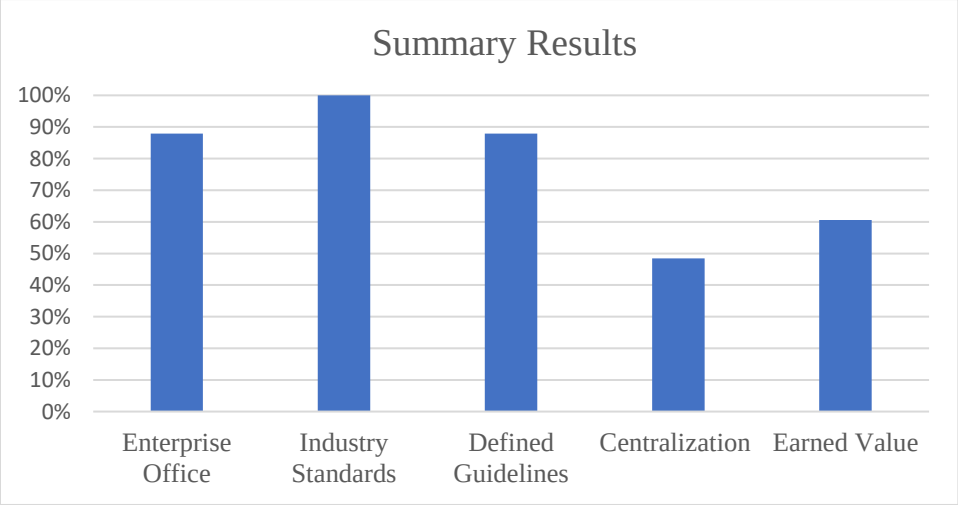
> Legislation for the monitoring of water across our state schools required implementation of sensors, data warehouse, and data analytics. But these costs were not factored into the legislation. So, the IT aspect was unfunded but crucial to success.

As part of the ongoing budgeting process, a few states apply a gate-based funding model. After projects are authorized, funding is allocated as they demonstrate progress and readiness. In these state governments, the EPMO has become the gatekeeper for agency projects. The EPMO, working on behalf of the Governor and CIO, recommend the amount of funding to allocate to major projects as they advance through gates. In addition, they evaluate risks toward completion of the projects and make funding contingent on the management of them. In describing their process at a summary level, one EPMO Director explained:

> The process ties funding gates to specific deliverables. Advancement through gates is tied to demonstrated progress. The CIO's office also makes specific funding recommendations, including recommendations to not fund certain requests if certain conditions are missing. This allows better allocation of limited funds.

Policy Development and Project Oversight. Although states have taken steps toward better strategic alignment, project delivery remains very decentralized. First, approximately half of the states identify as decentralized, meaning that agencies are not required to follow any guidelines issued by the EPMO to begin with. Furthermore, only a few centralized states have true enforcement mechanisms, such as the gated funding process described above. In developing their project management guidelines, each of the states has used Project Management Institute (PMI) standards and roughly half indicate using guidance from other states. As Figure 3 shows, the vast majority of states have enacted simple components of the reforms – establishing an office, selecting industry standards, and defining guidelines. However, agencies are only required to follow EPMO guidelines in less than half of the states (centralization) and best practices for project monitoring (Earned Value) are not always required.

Figure 3: Summary Results



One interesting component of EPMO oversight is that many report involvement with Independent Verification and Validation (IV&V) of agency projects. At the summary level, the purpose of IV&V is to provide assurance from a neutral party that the technical solution satisfies requirements and business needs. In many cases, IV&V is performed for major projects by vendors approved by the EPMO. Generally, managers spoke positively about their processes, often pointing to early

detection of project risks and more realistic timelines and budgets. However, they were also quick to point out the limitations of relying on periodic, external reviews. Furthermore, a few managers shared concerns with the quality and independence of their external reviewers. As one senior manager explained:

> We learned the hard way. You can't just let the IV&V vendors go off and do their own thing, you have to watch over them, especially on these large IT projects. They'll go native sometimes and become part of the team and not give objective news…My team will sit in on the meetings…they will challenge the vendor if they think something is wrong.

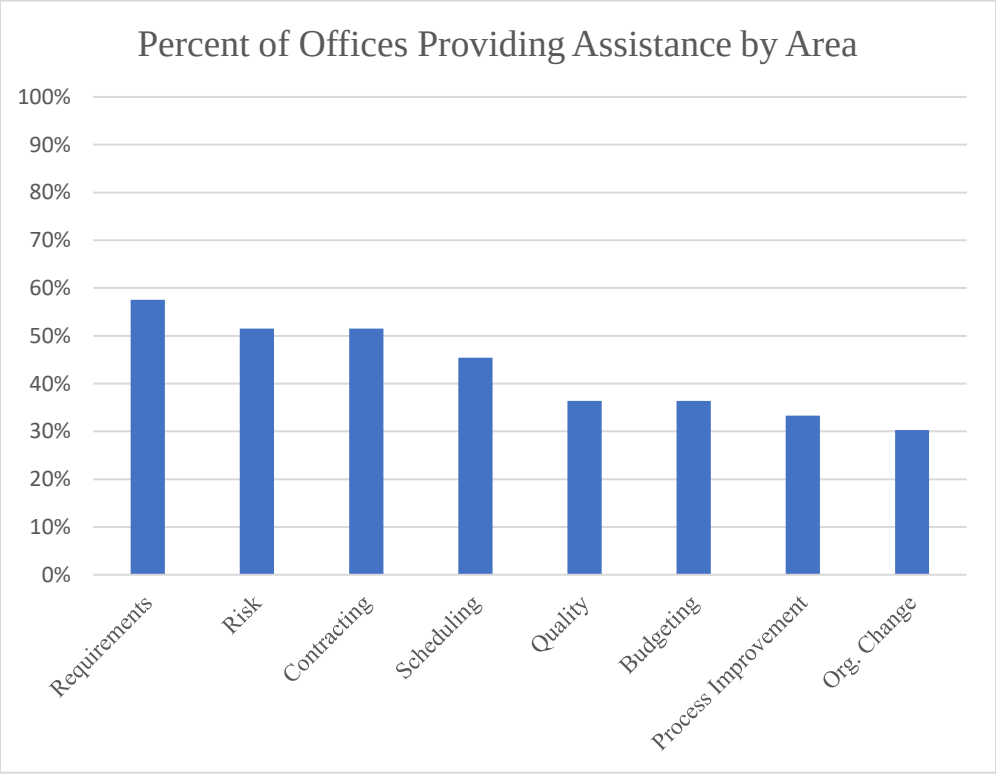
Regarding project monitoring, just more than half currently use Earned Value Management (EVM). Reasons given for its adoption focus on the need to improve project delivery, with EVM being selected because of its status as an internationally recognized best practice. States that use EVM tend be ones with the highest expenditures, with no relationship to political orientation (Grandage, 2021). That said, EVM usage varies significantly, with some applying it on all major projects and others hardly using it. Overall, results are consistent with the literature – EVM contributes to proactive cost and schedule management, but several factors are critical for effective implementation (Grandage, 2022). Specifically, findings indicate that managing knowledge and change at the organizational level, along with the development of scalable processes, takes on greater importance than standardization and other command-and-control tactics.

Of the EVM practices observed in the states, Georgia offered a promising strategy. The state uses the Georgia Enterprise Management Suite (GEMS) as their portfolio management tool. Like many applications, GEMS tracks traditional metrics, but it also is designed to capture the ideas of all team members through a survey and not just the project manager. Therefore, the analysis of schedule progress involves the Schedule Performance Index (SPI), but also the perceptions of other team members on the likelihood of achieving schedule objectives. These perceptions are captured via a five-point Likert scale (strongly agree to strongly disagree) and open-ended comment boxes. During the initial webinar, when this process was explained, several states expressed interest and officers from Georgia gave a presentation on GEMS at a following webinar. In short, the process was viewed as desirable because of greater visibility of project performance, open communication, and the respect it shows to project team members by giving them voice in reporting performance.

Knowledge Management. Of the core functions, knowledge management appears to be the least developed. First, despite the fact that states have been managing technology projects for several decades, their managers have historically lived on different islands. In fact, an officer from one state described their original focus to be convincing agencies that project management was a

profession separate from engineering that needed to be respected and developed. As they explained, "everybody was a project manager, but nobody really was". Therefore, they and many other states, pushed for resources to offer avenues to professionalization. In speaking with officers from a few states, they described their recent efforts as very targeted. That is, no longer do they envision building capacity statewide. Instead, they plan to pull projects out of agencies that irregularly deal with them, have the EPMO manage them, and build capacity where the spending is concentrated. Figure 4 provides an overview of the areas EPMOs report assisting agencies in managing their major projects with consulting services. As it indicates, only half of the EPMOs identify as being formally involved with consulting, but most retain some type of informal role.

Figure 4: Consulting Areas



To varying degrees, the states have lessons learned processes. However, like many organizations, they have struggled to move from lesson identification to organizational learning. That is, lessons are recorded, but not necessarily applied. A few states with relatively well-developed processes shared their practices with others to promote lesson application. First, teams record lessons learned throughout the project lifecycle. After agencies record their lessons in the portfolio management tool, the EPMO categorizes them and maintains the repository to ensure redundant lessons are not

added. Finally, as agencies execute projects, they can access lessons learned by project phase and knowledge area. In a few states, the EPMO has amassed hundreds of lessons learned. As one manager explained:

> Lessons learned are part of our project management enterprise tool. Our project management methodology has stage exits throughout the lifecycle that are used to help collect lessons at specific points…An example of applying process improvements came from our product and process quality assurance (PPQA) process in conjunction with the lessons learned validating there was an issue in the timeliness and planning with our software application lifecycle approval process. Researching into the concerns, it was determined our project managers did not have the access needed to accurately monitor and track the lifecycle approval steps. Access was provided and additional training set up to assist project managers with this task.

Still, many EPMOs struggle to foster organizational learning. However, the good news is that they need not continue living on their respective islands. Prior to this study, state EPMO Directors had yet to collaborate on a significant level. During the course of the research, it became clear that states would benefit from regularly sharing information. First, public management is characterized by a unique legal and political environment, limiting the availability to draw on generic knowledge. Second, although each state is unique, they can each be considered conglomerates with similar operations – healthcare, transportation, education, etc. For example, each state must operate a Medicaid system, so it is preposterous for each to go their own way. Third, their lessons learned are not of a proprietary nature for the purposes of competitive advantage. Finally, states that are early on in their reforms can learn from others that are further along. Hence, this approach can also be applied to other public organizations.

Discussion

Central project offices have existed for quite some time in one form or another (Darling and Whitty, 2016), but their presence has increased along with the growing recognition of the importance of effective project management for organizational performance in the public and private sector (Dinsmore and Rocha, 2012, Kunkle et al., 2017). Ultimately, the rise of the EPMO concept in state government can be traced to modernization that challenged traditional planning and management systems that were decentralized and disappointing. Considering the core functions of enterprise project management, states have focused more on strategic alignment, policy development and oversight than knowledge management. However, planning is more centralized than management, with state leadership playing an active role in strategic alignment

and agencies having considerable discretion in choosing the management practices for their major projects.

So, how can we put these findings into context? The experiences of the states have points in common with the general rise of enterprise project management in terms of timing and impetuses. First, the EPMO is a relatively new formal institution to state government, having gained widespread popularity within the last decade (See Figure 1). Thus, it can be said that the EPMO arrived in state government roughly in parallel with the general growth in their popularity. However, because offices were formed after 2000 and some not until very recently, it can be argued that some states have arrived a little late, given the emergence of the concept in the 1990s and early 2000s (Dinsmore, 1999, Dinsmore and Rocha, 2012, Dai and Wells, 2004).

Regarding the impetuses for establishing EPMOs, like many organizations, the states faced dual pressures for better performance and accountability. As noted in the previous section, reforms were put in place to respond to project failures and persistent time and cost overruns. In the states, the reforms aimed not only to improve project management capabilities, but to establish better governance structures. Meanwhile, the private sector offered its own set of high-profile blunders in the United States during this time period, such as Enron and WorldCom, that focused attention on the need for better corporate governance, with enterprise project governance being an outgrowth of this movement (Dinsmore and Rocha, 2012).

Next, findings can also be discussed within the context of reforms in the U.S. federal government. In 1996, Congress passed the Clinger-Cohen Act which aimed to improve large-scale IT acquisitions by designating roles and responsibilities for CIOs of federal agencies, along with the establishment of performance management routines. As part of the act, federal agencies were required to develop management processes for major IT projects, which evolved to include the use of EVM. In discussing these reforms, it is important to keep in mind that the 1990s was a significant period for performance management reforms, with the U.S. federal government passing the Government Performance and Results Act of 1993 and the Federal Acquisitions Streamlining Act of 1994. Similarly, U.S. state governments reformed their performance management and budgeting systems during this same period (Lu and Willoughby, 2018). Hence, IT project management reforms in both the U.S. federal and state governments can be traced to government modernization coinciding with a strong appetite for government reform.

All things considered, enterprise project management in state government is designed to fit the needs of asset owners. That is, state governments engage in projects to acquire assets for service delivery. Therefore, they tend to emphasize strategic alignment for the purposes of selecting the

right capital investments. Although EPMOs do monitor agency progress toward completion, it is best to describe their processes as decentralized, given that EPMO guidelines are optional. Furthermore, the lack of consistent EVM usage in some states makes it unclear how the EPMO would monitor progress toward completion of agency projects in real-time. In contrast, a contractor who engages in the project for profit would presumably have more proactive cost management.

On the topic of EVM, the experiences of the states provide insight into usage at this level of government. In comparison to the U.S. federal government, EVM in the states is relatively new and decentralized. It is new in the sense that it has emerged in the last two decades and decentralized because of optional guidelines. Again, just over half of the state governments report using EVM for their major IT projects, and those that do tend to have higher expenditures and more regularly deal with costly investments. Interestingly, less than a handful of states that currently use EVM report any direct reference to federal policy. Thus, although the U.S. federal government has done much to spread the practice of EVM in the public sector at the national level, the same direct connection cannot be made to its own state governments.

The observation that there are challenges in moving from lesson identification to organizational learning is hardly unique to state governments (Duffield and Whitty, 2015). Indeed, many organizations have struggled in realizing the intended benefits of the lessons learned process. Moving forward, it will be interesting to see the types of gains made in the knowledge management arena, if any, that come from collaborations across state lines. After all, the states each reside in similar operating environments and face common challenges. For example, in moving from lesson identification to organizational learning, ideas have been floated for integrating storytelling into lessons learned (Duffield and Whitty, 2016), not only for the purposes of knowledge management but also for creating cultures with shared experiences.[4] In addition, managers have expressed interest in working together on return-on-investment studies for EPMOs in state government. Ideally, this would help identify EPMO functions adding the most value, helping demonstrate the value of project management to state leadership in obtaining adequate and stable funding to create environments supportive of project managers.

Ultimately, this "state of the states" helps illustrate the numerous skills that an EPMO manager must have. When considering the management of individual projects, it is well understood that a blend of technical and managerial skills is needed. However, when considering the roles of a state EPMO Director, it is clear they ought to be capable of analyzing return on investment, supporting

[4] Please see U.S. Government Accountability Office (GAO), "Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Program Costs" for an impressive use of embedding storytelling in policy documents via cases.

political negotiations, serving as a knowledge broker, and managing organizational change, in addition to traditional project delivery competencies. Furthermore, the examples highlighted in the study from different states can be combined to outline some of the basic components of an enterprise project management strategy for public organizations.

First, EPMOs can help units within their organization prepare their technology plans and spending proposals, develop priority ranking systems, and assist political leaders in their budget negotiations. Furthermore, to help ensure investments meet business needs, EPMOs can involve themselves in IV&V, specifically in ensuring the quality and independence of the reviewers. Recognizing the limitations of periodic external reviews, participatory EVM practices can be used for monthly reporting to provide traditional, objective EVM data, along with qualitative feedback from project team members. Finally, EPMO directors can serve as knowledge brokers by managing the lessons learned process and collaborating with similar organizations (Hadi et al., 2022). Obviously, there are many more factors one could add to a model of enterprise project management, especially considering the importance of managing organizational change and creating environments supportive of project managers.

Conclusion

This study contributes to our understanding of enterprise project management with original research on U.S. state governments. Specifically, a study of 33 states finds that the EPMO concept has been all but fully embraced, albeit it in an eclectic fashion. Although states have taken significant steps to centralize and formalize technology planning, project delivery remains largely decentralized and ad-hoc. Throughout the study, examples were highlighted to showcase best practices and lessons learned.

As state and local governments face greater demands for performance and accountability, the EPMO concept may become more prominent in these settings. Although this study concerns IT project management in state government, the findings should be informative for other public organizations, especially large cities, hospitals, and university systems. Future research can expand on this study examining enterprise project management in these areas.

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