# IMPROVING THE MANAGEMENT OF INFORMATION TECHNOLOGY PROJECTS: A PRELIMINARY ANALYSIS OF THE CALIFORNIA PROJECT MANAGEMENT METHODOLOGY

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Abstract

of

IMPROVING THE MANAGEMENT OF

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The California Technology Agency (CaTA) has adopted the California Project Management Methodology (CA-PMM) as a tool to help information technology (IT) project managers deliver successful IT projects. The California state agencies developing these IT projects are attempting to capitalize on technological innovation to enhance the delivery of services to Californians. Despite the widespread use of this project management tool throughout the state, the impact of the CA-PMM on IT projects was unknown. This thesis studies the impact of the CA-PMM by comparing the outcomes of IT projects started before the implementation of CA-PMM to projects started after its implementation.

Using publicly available data from the CaTA IT Project Tracking website, I tested whether statistically significant differences existed between IT projects that started before and those that began after the implementation of CA-PMM. My study answered three questions based on data about IT project costs, milestone completion, and project completion.

The results from my research support that the CA-PMM is having a positive impact on IT project outcomes. Projects begun since the implementation of CA-PMM are less likely to revise their budgets than projects begun before the implementation of CA-PMM. In addition, there were fewer delays in project milestone completion since the implementation of CA-PMM. Even overall project completion delays seem to be on the downward trend. However, these results should be considered with caution, as they are not causal; there may be other explanations for the difference in project outcomes since the implementation of CA-PMM. The results from this preliminary study underscore the need for future research to determine the impact that the CA-PMM is having on IT project outcomes throughout the state.

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I am a true believer that success is not just a reflection of the individual, but of the community of people that have contributed to that individual's success. I have been fortunate to encounter so many individuals that have inspired, helped, shaped, and supported me toward a successful path in life, let alone completing my Master's thesis.

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# Chapter 1

## CALIFORNIA'S TECHNOLOGY GAP

California is home to many of the world's leading technology companies that have shaped the way global businesses operate. Companies like Apple, Oracle, and Salesforce.com have changed the landscape of information technology (IT) infrastructure, enabling the private industry to benefit from sophisticated IT infrastructure and software analytics to improve services for its customers. Despite a geographic advantage, California's state agencies have been slow to utilize improved IT infrastructure to enhance the delivery of services to Californians. Some critics suggest that California's governance system itself is outdated and only able to utilize new technology once it has become obsolete (Gunnison, 1997). For better or worse, California's democratic system moves systematically to guarantee that checks and balances prevent unfettered and wasteful spending (McCormick, 1997). Due to recent changes in legislation, the California Technology Agency's (CaTA) responsibility is to oversee statewide IT infrastructure and invest tax dollars wisely to create public value.

The Program Management Office (PMO) of the CaTA has the difficult task of overseeing the successful completion of large IT projects undertaken by state agencies. California state agencies are historically paper intensive institutions that have been slow to adopt IT infrastructure that can bring more effective and efficient services to Californians. The PMO is currently monitoring 53 large IT projects that aim to help state

agencies improve services at an estimated cost of $4.96 billion[1] (California Technology Agency, 2012). The trend toward investment in IT infrastructure to improve business practices will continue to grow for all state agencies. However, it is imperative that the PMO be able to oversee and ensure the successful completion of these IT projects.

The PMO has adopted the California Project Management Methodology (CA-PMM) as a tool to help carry out its mission to provide primary support for program and project planning, investment analysis, and project management (California Technology Agency, 2011). The CA-PMM is essentially a "tool of the trade" for project managers at California state agencies.

## Research Question

This thesis explores whether the CA-PMM is the best tool to fulfill the PMO's mission to ensure successful delivery of IT projects that will benefit the state. In this thesis, I analyze whether the CA-PMM toolkit is helping project managers deliver IT project success.

In particular, I examined the ability of CA-PMM to accurately estimate project cost and deliver on key milestones.

A. *How effective is the CA-PMM in helping IT project managers estimate IT project costs?*
B. How effective is the CA-PMM in helping IT project managers deliver on estimated milestone completion dates?

[1] The California Technology website indicates $4.96 billion. Results from this study indicate that the adjusted IT project budget amount is $5.39 billion. In addition, this study began prior to the completion or suspension of certain IT projects, and thus the number of current projects may not be current.

C. How effective is the CA-PMM in helping IT project managers deliver IT projects within the estimated project timelines?

I gathered data from the CaTA IT Project Tracking website on February 17, 2013 to answer this question at http://www.cio.ca.gov/Government/IT_Policy/IT_Projects/index.html.

## History of the California Technology Agency

In 1995, legislation established the Department of Information Technology (DOIT) to make strategic decisions on statewide IT infrastructure. Although the DOIT's mission was to oversee the state's information technology future, internal and external problems made it impossible for DOIT to oversee the state's IT policies and initiatives (Peterson, 2002). As a result, state lawmakers saw little value in the DOIT, and soon after, the department dissipated (California Technology Agency, 2011).

On July 1, 2002, provisional statues that empowered the DOIT expired, and the IT oversight roles diffused to other state control agencies. The position of the State Chief Information Officer (CIO) advised the Governor on statewide IT policy. The Department of Finance (DOF) began to make decisions on statewide IT policy, project initiation, project oversight, and security (California Technology Agency, 2011). Meanwhile, the Department of General Services (DGS) governed IT procurement policy and implementation (California Technology Agency, 2011). The disbandment of the DOIT also brought forth a more collaborative approach to statewide IT policy. Leaders of statewide IT policy created collaborative governance bodies to help make informed IT policy decisions.

In 2006, the Legislature passed new legislation that introduced more changes to the state's IT future. SB 834 (2006) codified the Office of the State Chief Information Officer (OCIO) and made the position of State CIO a cabinet-level appointment, subject to Senate confirmation. The Senate appropriated funds for the OCIO to carry out the Governor's directive. Although SB 834 empowered the State CIO to advise the Governor on the strategic management of statewide information technology, the control of information technology policies and procedures remained disparate, with the DOF and the DGS still in charge of their respective duties after the dissolution of the DOIT.

In 2010, the Legislature acted again to improve the information technology future of California. Former Governor Arnold Schwarzenegger signed AB 2408 in recognition of the need to consolidate statewide information technology governance (California Technology Agency, 2011). AB 2408 (2010) consolidated the disparate functions previously performed by the DOF and the DGS by reestablishing a centralized state agency—now called the California Technology Agency—that is responsible for overseeing statewide IT policy and all state IT projects. The bill also renamed the position of State CIO as the Secretary of California Technology (California Technology Agency, 2011). An important element of this reorganization was the necessity to re-establish statewide oversight of information technology projects commenced by state agencies.

## Impetus for the California Project Management Methodology

A big factor in the development of the CA-PMM was the Legislature's frustration with mismanaged information technology projects (Senate Committee on Governmental

Organization, 2010). Not only did the dissolution of the DOIT decentralize control of the state's IT policies, it also had a negative impact on IT project oversight and management. Numerous legislators grew frustrated with the department leaders who could not provide answers about IT projects undertaken by their department, status reports on progress, or the amount of money currently spent on IT projects (Sterngold, 2005). Although the DOF and the DGS had specific IT duties, they were not a centralized agency that could coordinate efforts to set IT policy and standards.

The Administrative Office of the Courts (AOC) foray into a large IT project further compelled the need for a statewide IT project tracking and reporting standard. At the time, the California Case Management System (CCMS) was one of the largest information technology projects undertaken by any state agency. The initial scope of CCMS was to link criminal and civil case information across 58 county courts that used 200 different systems (California State Auditor, 2011). However, the scope of the project grew, incorporating more features and involving more stakeholders (*ibid*). The Bureau of State Audits report (2011) specifically mentioned that the problem with CCMS was poor project management. The Legislature's discontent with the lack of statewide standards was clearly apparent in early AB 2408 (2010) subcommittee meetings. In Joint Legislative Budget Committee proceedings, legislators specifically cited the need for the OCIO to brief the committee on the progress of CCMS because of the lack of general project oversight (Senate Committee on Governmental Organization, 2010). It has been ten years and $500 million dollars since work began on CCMS. As of today, work on

CCMS has stopped. Meanwhile, the state still does not have a statewide case management system (The Sacramento Bee, 2012).

Other large-scale, high profile IT projects has garnered the attention of state lawmakers and the public. The State Controller's Office (SCO) has recently halted work on the estimated $370 million 21st Century Project that was designed to streamline the state's payroll and human resources functions with a new system called My CalPAYS (The Sacramento Bee, 2013), (California State Controller's Office, 2012). Additionally, the Department of Finance is responsible for the success of the state's new $616 million Financial Information System for California (FI$Cal) project that seeks to improve the way state agencies perform budgeting, accounting, procurement, and cash management functions (State of California, 2011). Recently, the Secretary of State's Office has received heightened attention over its own IT based project—California Business Connect—which will change its current paper-based business incorporation filing system (Ortiz, 2013).

The adoption of the CA-PMM was a direct reaction to years of lax oversight of statewide IT projects (Senate Committee on Governmental Organization, 2010). AB 2408 (2010) empowered the CaTA to develop a standardized methodology and approach to IT project management. Recent research has linked the use of PMBOK to IT project success and completion in private and public organizations (Abu Ali, 2010), (Chen, 2009). However, there is a lack of understanding about whether the CA-PMM is the most suitable tool project managers can employ to ensure the success of IT projects in California. This thesis attempts to answer that question by determining whether the CA-

PMM is helping project managers deliver IT projects success. If the CA-PMM is not delivering the desired results, how can we improve the CA-PMM to ensure IT project success?

## Organization of this Thesis

This first chapter presents the issue facing our state and provides historical background for the California Project Management Methodology (CA-PMM). In Chapter 2, I review the project management literature to understand the profession and provide a foundation for my research. In Chapter 3, I explain my research methods, define the information used in my analysis, and identify the data used for this thesis. I provide the findings of my study in Chapter 4. Finally, in Chapter 5, I discuss implications of the findings and provide recommendations on how to improve the California Project Management Methodology (CA-PMM) to ensure the successful completion of information technology projects undertaken by state agencies.

# Chapter 2

## WHAT WE KNOW ABOUT PROJECT MANAGEMENT

The California Project Management Methodology (CA-PMM)—also known as the Statewide Information Management Manual (SIMM) § 17—is a customized toolkit that borrows project management knowledge, skills, tools and techniques from the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK) (California Technology Agency, 2011). The CA-PMM identifies specific tasks and activities that a project manager must know and perform to aid in the completion of IT projects, such as performing cost estimation, project scoping, complexity analysis, identifying project benefits, and preparing a Work Breakdown Structure (WBS)—also referred to as the "hard skills" of project management. "The goal [of the CA-PMM] is to prevent Project Managers and their teams from reinventing the wheel and to assist them in becoming successful and effective in implementing IT projects" (California Technology Agency, 2011, p. 11). There is little academic research available on the CA-PMM. However, numerous scholars have conducted studies on PMBOK and the other project management principles that provide insight for this study.

I reviewed the recent project management literature that is beginning to reshape the field of project management. First, I present the principles of the PMBOK to provide a foundational understanding of the project management discipline. Second, I define the term "project management" for the purpose of this thesis. Third, I discuss how the application of the project management principles deviates from the theory. Fourth, I discuss some of the recent developments in the field of project management. Finally, I

examine the arguments about the necessity to re-evaluate the lexicon of project management.

## Project Management Body of Knowledge

The American Defense industry and NASA initially documented the PMBOK principles during the 1960s-1970s (Peng, 2007). The Project Management Institute (PMI) was one of several international organizations that spearheaded the growth of project management as a professional discipline. In 1987, PMI published the first edition of *A Guide to the Project Management Body of Knowledge* (Project Management Institute, 2008) and will release a 5th edition in 2013.

The PMI's Project Management Body of Knowledge (PMBOK) is an inclusive term that describes the sum of knowledge within the profession (Project Management Institute, 2008) and has become one of the preeminent standards of project management. PMBOK has nine knowledge areas that comprise the practices and processes of project management (*ibid*).

Figure 2.1: PMBOK Knowledge Areas


The PMI continues to expand the knowledge base of project management and advance the academic credibility of the discipline. PMI offers the Project Management Professional (PMP) training that qualifies applicants to become certified project managers (Project Management Insitute, 2013). These PMP professionals presumably will have the requisite education, skill, and competency to lead and direct projects to ensure completion. Recent research in Arab countries suggests that more companies demand certified PMPs to oversee IT projects because of their training and certification requirements (Abu Ali, 2010). Abu Ali (2010) suggests that PMPs have the critical training and certification required to ensure the completion of IT projects. In addition,

Abu Ali suggests that the demand for certified PMPs will increase because the project managers will have the requisite knowledge to help avoid project failures (*ibid*).

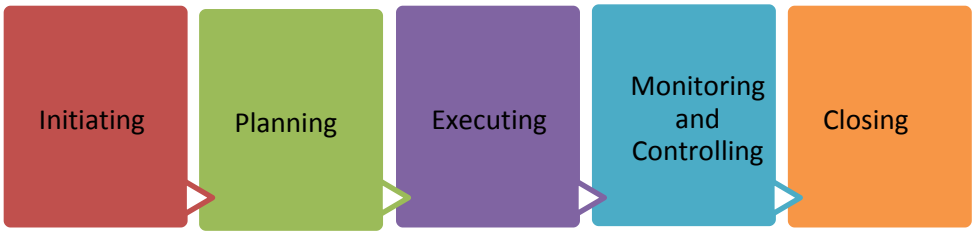
## Definition of Project Management

### *PMI Definition*

The term "project management" is often times used to describe an organizational approach to the management of ongoing operations (Project Management Institute, 2008). The PMBOK principles are applicable to an abundant number of fields and disciplines such as IT and construction projects (Project Management Institute, 1997). For this thesis, I reviewed the project management literature to provide a context for the analysis of the CA-PMM.

Project management is a methodology and framework of activities that project managers perform to complete a project. "Project management is the application of knowledge, skills, tools and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project" (Project Management Institute, 2008, p. 6). The Project Management Institute has identified a project life cycle to conceptualize the process of a project. Each of these cycles contains process components outlined in Figure 2.1: PMBOK Knowledge Areas. For instance, the Planning Life Cycle contains Scope Planning and Scope Definition.

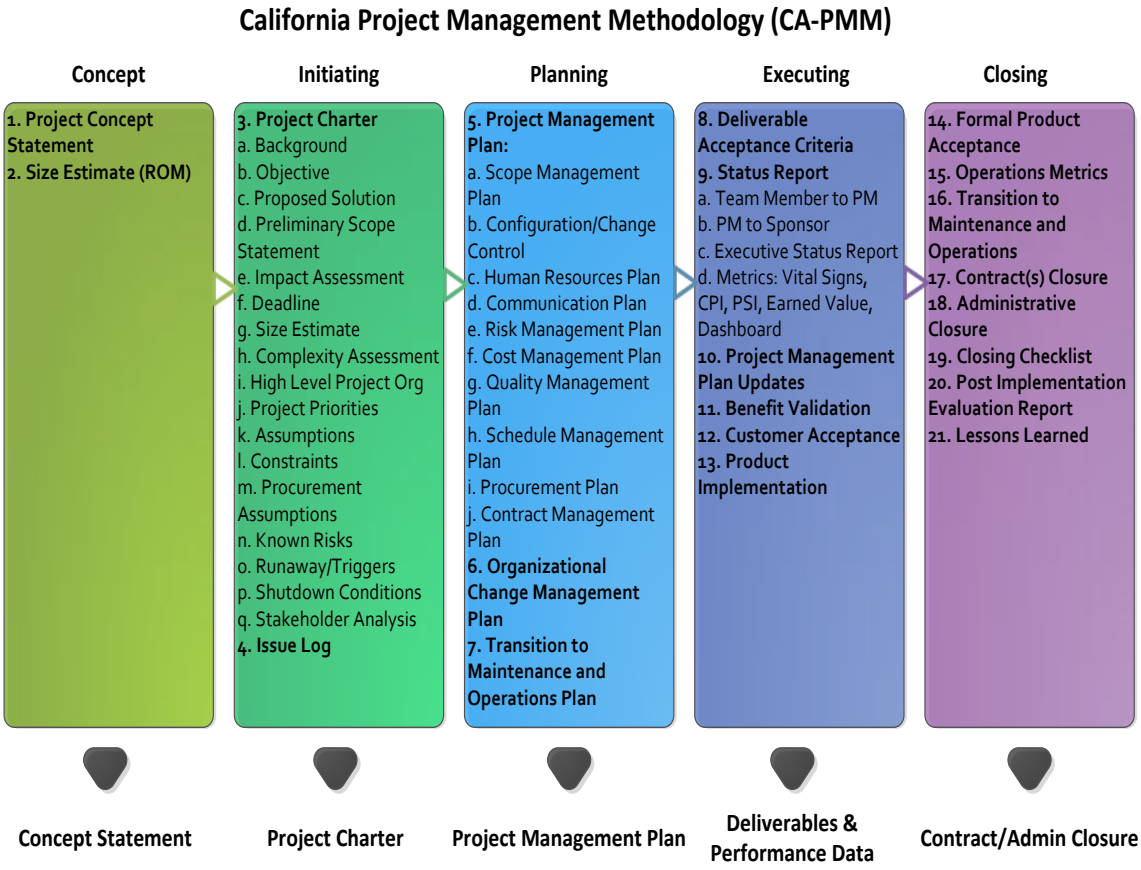
Figure 2.2: PMI Project Management Life Cycle




*CA-PMM Definition*

The CA-PMM defines project management as the application of knowledge, skills, and techniques that receive inputs and generate outputs to complete an IT project (California Technology Agency, 2011). The CA-PMM draws upon the principles from the PMBOK standard, with deliverables and phases customized to meet the needs of California. The CA-PMM identifies five stages of an IT project, referred to as Life Cycles: Concept, Initiating, Planning, Executing, and Closing (California Technology Agency, 2011). Each of these Life Cycles contains tasks and deliverables designed to help California IT project managers deliver a successful project.

Figure 2.3: California Project Management Methodology (CA-PMM)




The project manager must perform certain tasks within each stage of the CA-PMM project life cycle in order to produce tangible outputs that help the project succeed. The stages of the Project Life Cycle are more indeterminate than they appear from the illustration above, as the completion of tasks within each stage may overlap. Each stage has specific tasks that help the project manager produce these outputs such as developing project scope and concept, reporting matrices, risk assessments, complexity analysis, status reports, and project closeout documentation. The CA-PMM is essentially a "How-To Success Guide" for IT project managers.

## The Value of PMBOK

Many industry researchers and professionals consider PMBOK as the preeminent worldwide standard for project management (Ghosh, 2012). A recent survey concluded that the PMBOK standards used together as a toolset, rather than as an individual set of information, are more effective and useful for project managers to deliver a successful project (Besner, 2012). Besner points out that the project managers and organizations have the power to determine what type of project management principles to utilize for projects, but that the series of tasks within the PMBOK principles are more useful than performing one task without the others (*ibid*). Ghosh (2012) compared other project management methodologies to PMBOK and found that all of the standards have overlapping methods, with PMBOK emphasizing the value of repeatable processes to help project managers complete common project tasks.

An analysis of the high profile Internal Revenue Service (IRS) Tax Systems Modernization (TSM) project suggests that better project management would have been beneficial (Bozeman, 2002). In one instance, Bozeman identified how an IRS project manager—who worked on smaller IT projects—lacked sufficient project management skills, which contributed to the implementation problems (*ibid*). Bozeman (2002) concluded that the lack of qualified project managers within the IRS led to a culture of IT project failure. The Tax Systems Modernization project was extremely complicated because it simultaneously introduced technical, organizational, and cultural change in an organization that was ill-equipped to handle any one change individually (*ibid*). In many respects, the IRS example mimics the IT projects that the SCO and DOF have already

started that will change how the entire state performs human resource (My CalPAYS) and financial (FI$Cal) functions.

Further evidence suggests that the PMBOK principles have benefits that go beyond single IT projects. My CalPAYS and FI$Cal are the type of organization-wide IT systems that define the term Enterprise Resource Planning (ERP) systems. An Enterprise Resource Planning system integrates many facets of an organization, such as planning, sales, and marketing that become part of the business process and support the organization's strategic direction (Chen, 2009). The results from a survey of state Chief Information Officers (CIO) suggest that establishment of a project management career path enhances the continuous improvement of IT project success (National Association of State Chief Information Officers, 2005). Chen (2009) concludes that the incorporation of PMI principles into Enterprise Resource Planning can have beneficial effects because of the similar skill sets required to ensure the success of both.

## Project Management Theory vs. Reality

The theory of project management often times does not replicate the reality during the application of project management principles. In an ideal world, each IT project manager will perform project management activities in a chronological order: defining the scope of project, estimating the amount of time required, estimating costs, ensuring quality of tasks performed, identifying human resources, establishing communication plans, identifying risks, and procuring goods and services (McDowell, 2001). In reality, IT projects lack enough planning time or sufficient resources to ensure completion (McDowell, 2001).

McDowell (2001) introduces the Just-in-time Project Management (JITPM) approach to successful "on-the-fly" IT project management. McDowell analyzes two similar large-scale IT projects initiated in a New England hospital. McDowell (2001) concluded that the failed IT project was due to reasons other than project management failure. For the successful IT project, McDowell concluded that the project had enough PMBOK principles engrained into the project that allowed it to succeed, despite the improper sequencing of the completion of those tasks (*ibid*).

Bryde (2003) contends that even if some organizations recognize the value of project management principles, the application of those principles are not consistent across organizations. The author suggests that organizations value the project management principles differently and thus, the application of those principles vary across organizations (Bryde, 2003). As a result, Bryde argues that theory of project management will always lag behind the practical application because of the differing levels of application of those project management principles. Researchers suggest that regardless of an organization's commitment to using PMBOK, other reasons can derail project success (Furumo, 2006).

Despite the application of project management principles, projects led by qualified project managers can still experience problems with implementation (Furumo, 2006). Furumo (2006) surveyed 128 respondents—all of whom were PMI members—and found that both public and private organizations experienced similar cost overruns and further that public organizations tend to complete the projects later than private organizations. In addition, Furumo reports that 46% of respondents felt that one of the

project management tasks—develop an initial project management flowchart—simply did not offer value for project managers to utilize during the project life cycle. The Furumo finding further supports the notion that project management theory differs from the real-world application.

Other researchers have suggested that the PMBOK principles alone are not enough (Al-Khouri (2012); Sarantis (2009); Peng, 2007). Sarantis compared three contemporary project management theories—Project in Controlled Environments (PRINCE), Project Management Institute (PMI), and Goal Directed Project Management (GDPM) (Sarantis, 2009). Although each theory brings value to the project management field, Sarantis (2009) identified several gaps in all three theories that fail to address the implementation issues as applied to government IT projects.

Table 2.1: Identified Gaps in Contemporary Project Management Methodology

| | **Identified Gaps in Contemporary Project Management Methodology** |
|---|---|
| **1.** | Inability in capturing the Goal-Driven Nature of e-Government Projects refers to the lack of mutually understandable goals of the IT project. |
| **2.** | Inadequacy in capturing the Multidimensional Nature of Projects refers to inability to realize that there are other issues that can impact the IT project, namely business and organization processes and reorganization. |
| **3.** | Dearth of Knowledge Transfer refers to the methodologies inability to gain from lessons learned. |
| **4.** | Poor modeling of e-Government Stakeholders refers to the lack of considering all stakeholder points of view. |

*Sarantis, 2009.*

These gaps in contemporary project management principles suggest that government IT projects managers need to embrace a more encompassing project management approach that can adequately address the deficiencies in the current practice.

## Developments in the Project Management Discipline

### *A New Approach to Project Management*

Project management researchers have concluded that there is a need to integrate other project management methodologies to establish a uniform approach to avoid project failures (Peng, 2007). Peng (2007) compared four international standards of project management—PMBOK, USA-International Competence Baseline (USA-ICB), American Society of the Advancement of Project Management (APMBOK), and P2M—and concluded that all four have valid approaches and techniques that may aid in the completion of projects. However, the author further contends that it is difficult to understand, study, and apply these principles in a uniform way to ensure project success (Peng, 2007).

Other researchers have tried to isolate the source of problems within project management in order to build a knowledge base to move forward. Cerpa and Verner (2009) surveyed a group of international project managers and practitioners to understand why software projects failed. Seventy out of the 235 completed surveys were "failed software projects."

Table 2.2: Software Project Failure Factors

| Software Project Failure Factors | Overall Percentage of Projects |
|---|---|
| **Delivery date impacted the development process** | 92.9 |
| **Project was underestimated** | 81.4 |
| **Risks were not re-assessed controlled, or managed through the projects** | 75.7 |
| **Staff were not rewarded for working long hours** | 74.3 |
| **Delivery decision made without adequate requirements information** | 72.9 |

| Software Project Failure Factors | Overall Percentage of Projects |
|---|---|
| **Staff had an unpleasant experience working on the project** | 72.9 |
| **Customers/Users not involved in making schedule estimates** | 71.4 |
| **Risk not incorporated into the project plan** | 70.0 |
| **Change control not monitored, nor dealt with effectively** | 70.0 |
| **Customer/Users had unrealistic expectations** | 68.6 |
| **Process did not have reviews at the end of each phase** | 67.1 |
| **Development Methodology was inappropriate for the project** | 65.7 |
| **Aggressive schedule affected team motivation** | 65.7 |
| **Scope changed during the project** | 64.3 |
| **Schedule had a negative effect on team member's life** | 62.9 |
| **Project had inadequate staff to meet the schedule** | 61.4 |
| **Staff added late to meet an aggressive schedule** | 61.4 |
| **Customers/Users did not make adequate time available for requirements gathering** | 60.0 |

*Cerpa. 2009.*

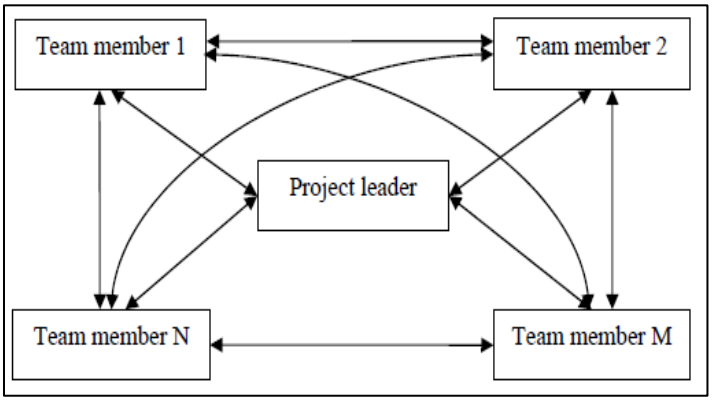
The author concludes that there are a multitude of reasons why a project fails—such as underestimated project scope or risk assessment—but there are other "people" factors that can impact project success—i.e. the schedule having a negative effect on a team member's life or not being rewarded for working long hours (Cerpa, 2009). Often times, public project managers have little control of the project delivery date (Furumo, 2006). Furumo (2006) noted that any future analysis on IT project cost and completion rates should distinguish between public and private because of the heightened scrutiny and more external regulatory oversight of public projects.

A recent study concluded that the current IT project management framework is incomplete. Al-Khouri (2012) asserted that there is currently no overarching framework of project management that can guide government led IT projects to success. The author further contends that IT project failure rates remain at 60 to 70 percent because the

project management methodologies focus too much on the technical aspects of project management, not the organizational management and people issues (Al-Khouri, 2012). Al-Khouri contends that new approaches to address the problem with the "management" and "people" aspects of the project management discipline are necessary (*ibid*).

Other research has identified another element that may add value to the project management discipline. Kisielnicki (2011) identifies that a network communication structure can help aid in the success of IT projects. Figure 2.2 illustrates the concept of Kisielnicki's simple network communication framework.

Figure 2.4: Simple Network Communication System




*Kisielnicki, 2011*

While the CA-PMM approach implores project members to communicate with one another, the communication structure has a more hierarchical structure that relies heavily on the Project Manager to assign reporting relationships and be the ultimate information gatekeeper (California Technology Agency, 2011). Kisielnicki (2011) further asserts that a network communication structure is more conducive to IT project success because it

fosters better: 1) progress monitoring, 2) cooperation and knowledge transfer, and 3) problem solving among its team members because they are more invested in the project.

The new developments in the field of project management suggest that the inclusion of additional elements may strengthen the CA-PMM. Past research suggests that a revised approach to communication (Kisielnicki, 2011) and the incorporation of more "people" and "management" skills (Al-Khouri, 2012) may add public value to the existing CA-PMM standard.

### *New Success Criteria in Project Management*

Atkinson (1999) proposes an entirely fresh approach to project management success criteria. The author suggests that the three evaluation principles of the "Iron Triangle" are flawed—cost, time, and quality (Atkinson, 1999). The task of estimating cost and time are at best guesses (*ibid*). In addition, Atkinson (1999) reduces the ability to produce a quality IT project as a mere phenomenon. Atkinson is challenging the project management industry to measure successes based on criterion that is harder to quantify—such as benefits to stakeholders and organizations.

## Beyond PMBOK

The academic research on the field of project management continues to evolve. Some new approaches challenge the status quo of evaluating IT project success. Other ideas aim to contribute to the wealth of the current project management knowledge. This thesis draws upon past research to chart out a new path to evaluate the CA-PMM.

*Redefining IT Project Success*

Recent research aims to re-evaluate the criteria to determine the success of IT projects (Karlsen, 2005). Karlsen (2005) proposes the adoption of four new criteria to measure success other than simply cost, time, and quality:

1. The IT system works as expected and solves the problem
2. The IT system has high reliability
3. The solution contributes to improved efficiency and competitive power
4. The IT system contributes to realization of strategic, tactical and operational goals

Unlike other researchers, Karlsen (2005) acknowledges that the Iron Triangle—cost, time, and quality—does have its legitimacy as a measurement criterion, but that it should not be the only criteria. Karlsen suggests that we should measure project management success holistically to include the process of the IT project, user's views of the project results, and the overall effectiveness in helping the organization achieve its goals (Karlsen, 2005).

Karlsen's research proposes a new way to define successful IT projects. However, this approach does not necessarily help IT project managers deliver a successful IT project. Even though Karlsen's new method of evaluation has some merit, the adoption of new measurement criteria does not seem likely, given the highly scrutinized nature of publicly funded IT projects in California (California State Auditor, 2011); (Senate Committee on Governmental Organization, 2010); Furumo, 2006).

*Emergence of Soft Skills in Project Management*

The addition of "soft skills" into the CA-PMM lexicon may be able to have more traction. Gillard (2009) concludes that it is becoming more evident that hard skills of project management are not enough to make projects successful. In addition to technical expertise, project managers need to have the solid interpersonal communication and leadership skills in order to make projects successful (Gillard, 2009).

Sukhoo (2005) identifies soft skills that may contribute to the project management lexicon. The author concludes that the combination of technical and soft skills should be part of the project management skill set to use during the project life cycle (Sukhoo, 2005). Each "soft skill" is important to project managers during different stages of IT project life cycles. It is imperative for a project manager to blend the hard and soft skills together and to know when and how to use each skill to ensure IT project success (*ibid*). Sukhoo further concludes that the addition of these types of "soft skills" may help improve the success rates of IT projects.

Figure 2.5: Soft Skills of Project Management


*Sukhoo, 2005.*

## Conclusion

The review of the existing literature about IT project management suggests that there may be some room for improvement. The analysis of the current project management literature is appropriate, given that the existing California Project Management Methodology (CA-PMM) borrows principles from the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK). I have identified the history of project management, the rationale for project management, and introduced some new ideas within the profession. Cerpa and Verner's (2009) and Furumo's (2006) research suggested that IT projects can still have problems with implementation, and that those problems may only increase if it is undertaken by a public entity. Suhkoo's (2005) analysis introduced the "soft skills" that I will use to evaluate the best course of action to improve the existing lexicon of the project management principles.

# Chapter 3

# METHODOLGY

My thesis evaluated the impact that the California Project Management Methodology (CA-PMM)—also known as the Statewide Information Management Manual (SIMM) § 17—toolkit is having on information technology (IT) projects throughout the state. In answering this question, I evaluated the utility of the CA-PMM by looking at two traditional IT project success standards: cost and time. I retrieved data from the CaTA IT Project Tracking website on February 17, 2013 at http://www.cio.ca.gov/Government/IT_Policy/IT_Projects/index.html to evaluate the CA-PMM standard.

I analyze both cost and time because these two sets of information are foundational indicators of IT project success. Although there is a movement within the project management literature to re-examine the definition of IT project success, cost and time are the success markers that are universally measurable at this time. This investigation of cost and time provides a basis for my study of this introductory research performed on the CA-PMM standard. Alternatively, this initial research on the CA-PMM may provide insight to future research to improve the CA-PMM standard.

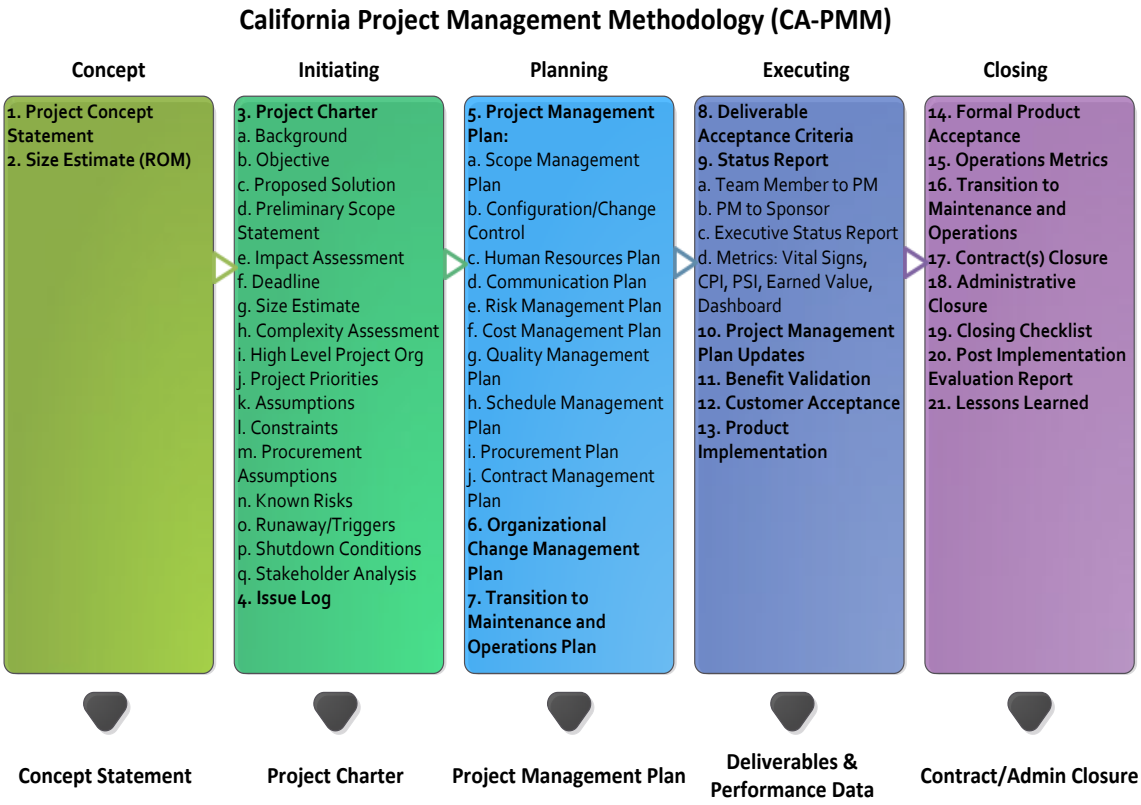
I gathered data from the three types of reports available: 1) Feasibility Study Report, 2) Special Project Report, and 3) Project Status Report. The respective reports provide key information such as IT project start and finish times, project costs and amounts spent, and milestone completion dates. I recorded the information into a project-reporting chart to assess the CA-PMM standard. The remainder of this chapter

identifies the contents of the California Project Management Methodology, explains the data used for this analysis, defines the research question, provides the definition of terms, describes the data analysis, and limitations.

## California Project Management Methodology

The CA-PMM toolkit is essentially a series of tasks and deliverables that project managers must perform and produce during each phase of an IT project lifecycle: concept, initiating, planning, executing, and closing (see Figure 3.1 below). It is the responsibility of the project manager to know and be able to perform these tasks and produce deliverables to ensure the completion of IT projects.

Figure 3.1: California Project Management Methodology (CA-PMM)



## Data Used for Analysis

The data used for this analysis are publicly available on the California Technology Agency (CaTA) website at: http://www.cio.ca.gov/Government/IT_Policy/IT_Projects/index.html. I gathered all of the available data from reports to the CaTA for this analysis. The CaTA reporting requirements are defined in Government Code § 11546(5), the SIMM §§ 05-90, and the State Administrative Manual (SAM) §§ 4819, 4920-4945. CaTA's role is to oversee and ensure the successful completion of IT projects that aim to bring public value to Californians.

I retrieved data from three types of reports that are publicly available: 1) Feasibility Study Report, 2) Special Project Report, and 3) Project Status Report. All of the reports provide critical information regarding the IT project time and budget estimates. The next three sections discuss the type of reports and data available.

### *Feasibility Study Report (FSR)*

The FSR (SIMM § 20) is a report that allows the CaTA to determine the necessity of implementing an IT solution to help solve a business problem. The State Administrative Manual (SAM) §§ 4920 through 4942 determines the requirement to submit an FSR to the CaTA.[2] The FSR is an initial reporting document that provides the California Technology Agency with enough information on a proposed IT project to determine whether the project should be approved, weighing its costs against its public

[2] The California Technology Agency does not require an FSR for all IT projects. Each department has a delegated authority to engage in IT projects that does not require CaTA oversight, contingent that the costs do not exceed the delegated authority. See the California Technology Agency information technology delegated cost threshold for more information: http://www.cio.ca.gov/Contact_Us/staff_assignments.html.

value. In addition to providing the control agency with a rationale for the proposed IT solution, the FSR also provides key information needed for the analysis: 1) project estimated start and finish dates, 2) project milestone delivery dates, and 3) project cost estimates.

*Special Project Report (SPR)*

The SPR (SIMM § 30) is the formal report that is submitted to the CaTA to document changes to IT projects that have already received FSR approval. As specified in SAM § 4819.36, seven events will require an agency to submit a SPR for an IT project already under development:

Table 3.1: Trigger Events for Special Project Reports

| | **Trigger Events that require Special Project Report submission to CaTA** |
|---|---|
| **1.** | The total information technology project costs deviate or are anticipated to deviate by ten percent (higher or lower) or more, or by more than a specifically designated amount as determined by the Technology Agency, from the last approved estimated information technology project budget (to be measured against the combined total of each fiscal year's One-time Project Costs plus Continuing Project Costs); |
| **2.** | The last approved overall project development schedule falls behind or is anticipated to fall behind by ten percent or more; |
| **3.** | The total program benefits deviate or are anticipated to deviate by ten percent (higher or lower) or more from the last approved estimated total program benefits (to be measured against the combined total of each fiscal year's Cost Savings and Cost Avoidances); |
| **4.** | A major change occurs in project requirements or methodology; |
| **5.** | Any conditions occur that require reporting to the Technology Agency as previously imposed by the Technology Agency; or |
| **6.** | A significant change in state policy draws into question the assumptions underlying the project; or |

| | Trigger Events that require Special Project Report submission to CaTA |
|---|---|
| **7.** | A project not previously subject to reporting now meets one of the following reporting criteria:<br>• a budget action is required to fund all or part of the IT expenditure;<br>• the total development cost is above the cost threshold established by the Technology Agency;<br>• the new system development or acquisition is specifically required by legislative mandate or is subject to specific legislative review, as specified in Budget Act control language or other legislation; or<br>• any conditions occur that require reporting to the Technology Agency, as previously imposed by the Technology Agency. |

SIMM § 30. 2011. p. 1-2.

I used the information gathered from any applicable SPRs to evaluate the effectiveness of the CA-PMM principles. Similar to the FSR, the SPR provided important information needed to assess the effectiveness of the CA-PMM to: 1) project and deliver on adjusted start and finish dates, 2) project and deliver on adjusted milestone dates, and 3) project and deliver an IT project within the adjusted costs.

*Project Status Report (PSR)*

The PSR (SIMM § 17D. 2) is a reporting tool that the California Technology Agency (CaTA) requires to ensure a standardized method of status updates on IT projects. The PSR provides the project manager with a toolkit to ensure that deliverables are on schedule and enhance the short and long-term vision for the entire IT project. The PSR provides important information needed to: 1) track the IT project progress, 2) track costs of the project, and 3) track milestone accomplishments to assess the effectiveness of the CA-PMM standard.

## Research Question

My inquiry answered whether the CA-PMM toolkit is helping project managers deliver IT project success by examining the ability to accurately estimate project cost and deliver on key milestones.

A. How effective is the CA-PMM in helping IT project managers estimate IT project costs?

The first success criterion measured the ability for the CA-PMM to estimate project costs. This question determined the CA-PMM's ability to approximate the entirety of costs associated with IT projects. The critical piece of the CA-PMM is to ask: What level of public value does this policy provide for Californians? Are the cost estimates an accurate reflection of the true costs of implementing an IT project or does the methodology fall short of its intended goal? The answer to these questions lies in the comparison between IT projects started Pre versus Post CA-PMM.

B. How effective is the CA-PMM in helping IT project managers deliver on estimated milestone completion dates?

The second success criteria examined the ability of the CA-PMM to help project managers deliver on estimated milestone completion dates. Projects of any sort, whether IT or non-IT related, may experience delays due to a variety of reasons. The analysis of this question helped determine whether the CA-PMM is a reasonable estimation tool or a methodology that should be re-evaluated. The focus of this inquiry is to ensure that project managers have a useful tool to deliver a completed IT project. Similar to question

A about cost, the answer to this question B lies in the comparison between IT projects started Pre versus Post CA-PMM.

C. How effective is the CA-PMM in helping IT project managers deliver IT projects within the estimated project timelines?

Another aspect of the second success criteria is the ability of the CA-PMM to help IT project managers deliver IT projects within the estimated project timelines. The analysis of this question helped determine whether the CA-PMM is an effective tool that will help project managers deliver an IT project or if the methodology should be re-evaluated. The focus of this question regarding the completion of an IT project is broader than the milestones within a project. This question is more of a question of whether the CA-PMM is helpful toward completing an entire IT project. The answer to this question lies in the comparison between IT projects started Pre versus Post CA-PMM.

## Definition of Terms

*Estimated Project Start Date*

I retrieved the estimated project start dates from the Feasibility Study Report (FSR) and Special Project Report (SPR) (*if applicable*). The project start date identifies when the IT project began. This date is important because it identifies whether the project belongs in the Pre CA-PMM or Post CA-PMM category. This information is a key identifier of IT projects pre versus post the implementation of the California Project Management Methodology (CA-PMM).

*Revised Project Start Date*

I retrieved the revised project start dates from the Feasibility Study Report (FSR) and Special Project Report (SPR) (*if applicable*). The revised project start date is a record of whether the IT project experienced start delays in the project. Procurement, funding, and resource issues can delay project start dates. The exact causes of the revised project start dates are interesting; however, they are not part of the scope of this thesis. This analysis is concerned with the occurrence of a revised project start date to compare IT projects pre versus post the implementation of the CA-PMM.

*Number of Revised Start Dates*

The number of revised project start dates is an indicator of the effect the CA-PMM on IT projects. This date is important because it provides a comparison of IT projects pre versus post CA-PMM implementation.

*Estimated Project End Date*

I retrieved the estimated project end dates from the Feasibility Study Report (FSR) and Special Project Report (SPR) (*if applicable*). The estimated project end date is a critical date for the entire project. This date determines the estimating ability of the project manager and the effectiveness of the CA-PMM toolkit to estimate the amount of time required for the IT project. This information is another key identifier of IT projects pre versus post the implementation of the CA-PMM.

*Revised Project End Date*

I retrieved the revised project end dates from the Feasibility Study Report (FSR) and Special Project Report (SPR) (*if applicable*). The revised project end date is a record

of whether the IT project experienced delays in the project. Procurement, funding, and resource issues can delay project end dates. Similar to the revised project start dates, the exact causes of the revised project end dates are interesting; however, they are not part of the scope of this thesis. This analysis is concerned with the occurrence of revised project end dates to compare IT projects pre versus post the implementation of the CA-PMM.

*Number of Revised End Dates*

The number of revised project end dates is an indicator of the effect that the CA-PMM has on IT projects. These end dates are important because they provide a comparison of IT projects pre versus post CA-PMM implementation.

*Original Project Budget (One-time & Ongoing)*

I retrieved the original project budget from the Feasibility Study Report (FSR) and Special Project Report (SPR) (*if applicable*). The original project budget is a critical element for the IT project. The project manager calculates the amount during the concept phase of the IT project. The CA-PMM provides guidelines to project managers for size estimating and scope definition that determines the project budget. The original project budget may offer the public the most useful information to determine the effectiveness of the CA-PMM. This forecasted budget figure may also provide insight into the project manager's ability to manage and the spending on IT projects.

*Difference of Revised Budget*

The difference of revised budget for IT projects is the dollar amount that the CA-PMM was unable to estimate. Similar to the estimated project start and end dates; the difference in budget amount may be due to a multitude of factors: procurement problems,

scope expansion and contraction, and funding and resource issues that increase costs. Despite this intriguing topic, the scope of this thesis is merely to document the occurrence of such figures—not to analyze the root causes.

*Projects with Revised Budget Amounts*

I retrieved the revised project budget amounts from the Special Project Report (SPR) and Project Status Report (PSR). The revised project budget is another key indicator in evaluating the effectiveness of the CA-PMM standard introduced by the California Technology Agency. A revised budget figure can indicate that the CA-PMM standard may need some modification or that it is ineffective altogether. There is real public value in terms of estimating costs because of the state of California's current budget conditions. It would help Californians know what to expect in terms of IT investment.

*Cumulative Total Amount Spent on Project to Date*

The cumulative total amount spent on project to date is a figure available on the Project Status Report (PSR). This amount total helps the California Technology Agency and the project manager track project spending.

*Reported Project Completion Percentage*

The project completion percentage is a figure reported in the Project Status Report (PSR). This number serves as a quick reference for the California Technology Agency and the project manager to keep apprised of the progress of the project.

*Number of Completed Milestones Reported*

I retrieved the number of completed milestones from the Project Status Report (PSR). The California Technology Agency wanted to provide IT project managers with a standardized method of reporting milestone deliverables. The milestones are initially set up in the Feasibility Study Report (FSR) or Special Project Report (SPR) and then reported in the PSR. These completed milestones are the primary indicators that an IT project is healthy and on track to be completed on time.

*Number of Days Past Due for Completed Milestones*

The number of days past due for completed milestones is a number derived from the Project Status Report (PSR). I calculated the amount of days between the original project milestone target date and the project milestone completed date. This calculation provides the variance between estimated and actual days needed to complete milestones.

*Average Delay of Milestone Completion (Days)*

The average length of altered milestone dates from the original is a key indicator of the progress of the IT project. The average length of altered milestone dates will be a key indicator used to determine the effectiveness of the CA-PMM standard to forecast successful IT project delivery.

*Number of Delayed Milestones Reported*

The number of delayed milestones reported is a number derived from the Project Status Report (PSR). The number of delayed milestones provides an indication of the health of a project, providing meaningful information about the effectiveness of the CA-PMM standard.

## Data Analysis

I answered the questions regarding cost and time using a project-reporting table that I created to record the information available in the Feasibility Study Report (FSR), Special Project Report (SPR), and Project Status Report (PSR). I grouped the information from the reports into three categories: 1) project timeline dates, 2) project costs, and 3) project milestones dates.

Table 3.2: Project-Reporting Table – Project Timeline Dates

| | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|
| **Project FSR** | | | | | | |
| **Project SPR** | | | | | | |
| **Project PSR** | | | | | | |

Table 3.3: Project-Reporting Table – Project Costs

| | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|
| **Project FSR** | | | | | |
| **Project SPR** | | | | | |
| **Project PSR** | | | | | |

Table 3.4: Project-Reporting Table – Project Milestone Dates

| | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|
| **Project FSR** | | | | | |
| **Project SPR** | | | | | |
| **Project PSR** | | | | | |

I divided the projects into two groups: 1) projects started prior to implementation of the CA-PMM, and 2) projects started after the implementation of the CA-PMM in order to compare and analyze the effectiveness of the CA-PMM standard. All of the data gathered was available in quantitative format. I entered all of the information onto the separate data sheets to keep the data organized. I used basic formulas in Microsoft Excel to calculate the total date revisions, dollar amounts, and milestone dates. I entered formulas on summary sheets that drew information from the raw data sheets to maintain data integrity.

*Comparison of Pre vs. Post CA-PMM*

The primary focus of this study is to evaluate the utility of the CA-PMM by analyzing its impact on success of statewide IT projects. I used the information recorded in the raw data sheets and the project summary sheet to analyze the CA-PMM standard. Table 3.5 lists the variables used to evaluate the benefit of the CA-PMM standard.

I used a *t-test* analysis to determine whether there is a statistical significance between the pre versus post CA-PMM data. The *t-test* determines whether the difference between two sets of information is due to chance. This *t-test* produces a numerical p-

value that measures the statistical significance. A calculated p-value threshold of less than 0.05 indicates that there is a statistical significance between two sets of information. In other words, if a *t-test* produces a p-value of less than 0.05, then there is a 95% chance that the differences between the pre and post CA-PMM data are accurate and not due to coincidence.

Table 3.5: Pre vs. Post CA-PMM

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM |
|---|---|---|
| **Number of Projects** | | |
| **Number of Revised Project Start Dates** | | |
| **Number of Revised Project End Dates** | | |
| **Original Project Budget (One-time & Ongoing)** | | |
| **Original & Revised Project Budget Total Amount** | | |
| **Difference of Original & Revised Project Budget Amount** | | |
| **Number of Projects that Revised Budget Amount** | | |
| **Number of Projects that Increased Scope** | | |
| **Number of Projects that Decreased Scope** | | |
| **Cumulative Total of Amount Spent on Projects To Date** | | |
| **Average Reported Project Completion Percentage To Date** | | |
| **Number of Reported Completed Milestones** | | |
| **Number of Days Past Due for Completed Milestone** | | |
| **Average Delay of Milestone Completion (Days)** | | |

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM |
|---|---|---|
| **Number of Delayed Milestones Reported** | | |

## Limitations

A constraint on this analysis is that the adoption of the CA-PMM standard is very recent. Even the lowest complexity level IT project can have an estimated project life cycle of two years. Furthermore, it is very common for IT related projects to experience delays or changes during the execution phase.

Another limitation of this study is that it relies on a subset of project status information. The Project Status Report (PSR) information is only available post December 2011 on the California Technology Agency (CaTA) website. It is currently unknown whether other reporting periods exist for the IT projects overseen by the CaTA, especially for projects pre CA-PMM.

Information Technology projects are unique and often difficult to compare. First, it is very difficult to compare the difficulty levels between all of the projects. A complex IT project may be more difficult for a particular agency to implement because of the lack of resources and funding. In other instances, the complexity of the IT project may be the cause of the implementation problems rather than resource or funding issues. Second, state agencies have different resources working for them. For instance, it may be difficult for the Attorney General's Office to find adequately qualified IT professionals to lead a project, presumably because a large percentage of the staff is comprised of attorneys and other legal professionals.

## Summary

I provided an overview of the research methodology used for my analysis of the California Project Management Methodology (CA-PMM). I described the data used for analysis, definition of terms, and the data analysis. In the following chapter, I discuss the findings from my research. In the final chapter, I consider the implications of my findings for the future of IT project management in California.

# Chapter 4

# RESULTS

In this chapter, I present the results of the IT project report chart. I examine the effectiveness of the CA-PMM in estimating IT project costs, the standards' ability to help IT project managers deliver on estimated milestone completion dates, and the standards' ability to help IT project managers deliver projects within the estimated timelines.

All three questions provide insight into my inquiry about the effectiveness of the CA-PMM toolkit. Is the CA-PMM standard helping project managers deliver IT project success by examining the ability to accurately estimate project cost, deliver on key milestones, and successfully complete projects within estimated timeframes?

Table 4.1: Summary of Pre vs. Post CA-PMM IT Projects

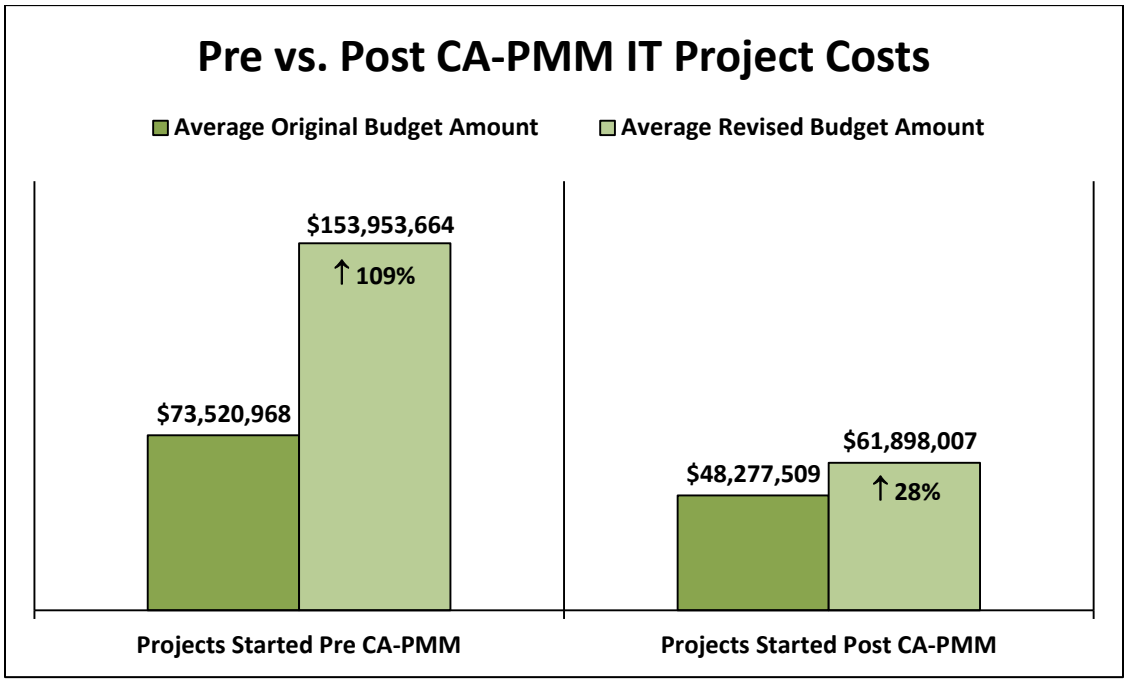
| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | Total |
|---|---|---|---|
| **Number of Projects** | 23 | 30 | 53 |
| **Number of Projects with Revised Start Dates** | 11 | 3 | 14 |
| **Number of Projects with Revised End Dates** | 17 | 5 | 22 |
| **Original Estimated Project Budget Totals** | $ 1,690,982,262 | $ 1,448,325,282 | $ 3,139,307,544 |
| **Average of Original Estimated Project Budget** | $ 73,520,968 | $ 48,277,509 | $ 59,232,218 |
| **Revised Estimated Project Budget Totals** | $ 3,540,934,281 | $ 1,856,940,218 | $ 5,397,874,499 |
| **Average of Revised Estimated Project Budget** | $ 153,953,664 | $ 61,898,007 | $ 101,846,689 |
| **Additional Estimated Project Costs Totals** | $ 1,849,952,019 | $ 408,614,936 | $ 2,258,566,955 |

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | Total |
|---|---|---|---|
| **Average of Additional Estimated Project Costs** | $ 88,097,763 | $ 34,051,245 | $ 68,444,483 |
| **Number of Projects that Revised Budget Amount** | 21 | 12 | 33 |
| **Percentage of Projects that Revised Budget Amount** | 91% | 40% | 62% |
| **Number of Projects that Increased Budget Amount** | 16 | 4 | 20 |
| **Percent of Projects that Increased Budget Amount** | 70% | 13% | 38% |
| **Number of Projects that Decreased Budget Amount** | 5 | 8 | 13 |
| **Percent of Projects that Decreased Budget Amount** | 22% | 27% | 25% |
| **Cumulative Total of Amount Spent on Projects To Date** | $ 1,288,749,562 | $ 156,826,346 | $ 1,445,575,907 |
| **Average Reported Project Completion Percentage To Date** | 60% | 53% | 57% |
| **Number of Reported Completed Milestones** | 119 | 99 | 218 |
| **Number of Days Past Due for Completed Milestone** | 12,886 | 2,409 | 15,295 |
| **Average Delay of Milestone Completion (Days)** | 108.29 | 24.33 | 59.17 |
| **Range for Average Delay of Milestone Completion (Days)** | 746 – -31 | 166 – -88 | |
| **Number of Delayed Milestones Reported** | 120 | 51 | 171 |

*Question A: How effective is the CA-PMM in helping IT project managers estimate IT project costs?*

The results show a marked difference in the budgets of IT projects before and after the implementation of the CA-PMM standard. Figure 4.1 illustrates the differences in original and revised budget amounts for the IT projects started before and after CA-PMM.

Figure 4.1: Pre vs. Post CA-PMM IT Project Costs




The average original budget of pre CA-PMM IT projects was $73,520,968 and the average revised budget amount was $153,953,664. This equals a 109% increase in the average budget costs for IT projects that began before the implementation of CA-PMM.

The average original budget of post CA-PMM projects was $48,277,509 and an average revised budget amount was $61,898,007. This equals a 28% increase in the average budget costs for IT projects that began after the implementation of CA-PMM.

Table 4.2: t-test Results for Pre vs. Post CA-PMM IT Project Costs

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | p-value |
|---|---|---|---|
| **Percentage Change in Budget** | 109% | 28% | 0.20 |
| **Percentage of Projects that Revised Budget Amount** | 91% | 40% | <0.01 |

I performed a t-test to determine whether the difference in project budgets between pre and post CA-PMM IT projects was statistically significant. The p-value of 0.20 indicates that the percentage change in budget is not statistically significant, meaning that the dollar difference between pre versus post CA-PMM projects are likely due to chance. This result suggests that the CA-PMM did not have a direct impact on the amount of the budget change between projects that started before its implementation versus the projects that started post implementation.

I also performed a t-test to determine whether the CA-PMM had any effect on budget changes for IT projects. Ninety-one percent of projects that started before CA-PMM needed to revise its budget. Meanwhile, 40% of projects that began after CA-PMM revised their project budgets. The p-value of <0.01 indicates that the percentage of projects that revised budget amounts are statistically significant. In other words, the results suggest that the CA-PMM is having an impact on the number of projects that need to revise the estimated project budget amounts.

*Question B: How effective is the CA-PMM in helping IT project managers deliver on estimated milestone completion dates?*

The results show a change in the reported project milestone completion dates since the implementation of the CA-PMM standard. Table 4.3 summarizes the number of completed milestones and the number of days these milestones were past due for IT projects started before and after CA-PMM.

Table 4.3: t-test Results for Pre vs. Post CA-PMM IT Project Milestones

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | Total | p-value |
|---|---|---|---|---|
| **Number of Reported Completed Milestones** | 119 | 99 | 218 | |
| **Number of Days Past Due for Completed Milestone** | 12,886 | 2,409 | 15,295 | |
| **Average Delay of Milestone Completion (Days)** | 108 | 24 | 59 | 0.02 |
| **Range for Average Delay of Milestone Completion (Days)** | 746 – -31 | 166 – -88 | | |

I performed the t-test to determine whether there was a significant difference in milestone completion before and after CA-PMM. The average delay of completed milestones for the pre CA-PMM IT projects was 108.29 days, with a range of 31 days early to 746 days late. Meanwhile, the average delay of completed milestones for the post CA-PMM IT projects was 24.33 days, with a range of 88 days early to 166 days late. The p-value of 0.02 indicates that the average delay of milestone completion is statistically significant, meaning that the variances between the pre and post CA-PMM

project milestone completion delays are likely not due to chance. This result suggests that the CA-PMM is having a positive impact on the timely completion of milestones.

*Question C: How effective is the CA-PMM in helping IT project managers deliver IT projects within the original estimated project timeline?*

The previous question focused on the completion of intermediary milestones. However, it is essential to understand the impact of CA-PMM on the ultimate completion of projects. The results of this last question are less conclusive than the previous two. In order to answer whether the CA-PMM is helping IT project managers deliver completed projects within the estimated timeframe, a dataset of completed IT projects would be required. The California Technology Agency website does not publish information on completed projects—only information on current IT projects overseen by the agency.

Nonetheless, I am able to create a proxy for completion by performing an analysis on the projects with revised start dates. A revised start date can delay the estimated project timeline, thus affecting the ability to complete an IT project within the original estimated timelines.

Table 4.4: t-test for Pre vs. Post CA-PMM IT Project Completion

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | p-value |
|---|---|---|---|
| **Number of Projects** | 23 | 30 | |
| **Projects with Revised Start Dates** | 11 | 3 | 0.01 |
| **Percent of Projects with Revised Start Dates** | 48% | 10% | |

I performed a t-test to determine whether there were significant differences in the start date revisions for projects before and after CA-PMM implementation. Forty-eight

percent of projects that began prior to the implementation of CA-PMM revised the project start dates. Of the post CA-PMM projects, 10% revised the project start dates. The p-value of 0.01 indicates that the number of projects with revised start dates are statistically significant, meaning that the differences in delayed start dates between the pre and post CA-PMM projects are likely not due to chance.

## Summary

### *Difference of Estimated and Revised Project Costs*

The results from the pre versus post CA-PMM comparison show a large amount of divergence in the estimated original and revised project costs. On average, the pre CA-PMM IT projects are more expensive to start. Furthermore, pre CA-PMM IT projects will have higher additional costs that were not included in the original budget. Conversely, the post CA-PMM IT projects have a lower average estimated original and revised budget cost. I find that while the increase in budgets are not statistically significantly different before and after CA-PMM (p-value 0.20), the likelihood of a budget revision is statistically significantly less after the implementation of CA-PMM (p-value <0.01). These results suggest that the CA-PMM is having an impact on estimated IT projects costs and unexpected additional project costs.

Of course, there may be other explanations for this result in addition to the implementation of CA-PMM. One possible explanation is that CaTA reorganized and received the resources to manage this regulatory program. Another could be that equipment has become cheaper as the industry develops newer and improved technologies. Optimistically, it could also be that the state and IT project managers have

simply gotten better at this. It is difficult to prove that the state has collectively improved implementing IT projects, but the theory does have merit. We have seen the initial estimated costs decline as well as the unexpected costs. In the end, the CA-PMM is requiring IT project managers to develop estimated project costs that are having a positive outcome on the final costs of IT projects.

*Overall Milestone Completion*

The results from the pre versus post CA-PMM comparison show a statistically significant difference (p-value 0.02) in the average delay of milestone completion. The pre CA-PMM IT projects were more likely to have longer delays to complete project milestones, averaging delays of over three months. Meanwhile, post CA-PMM IT projects are averaging delays of less than one month to complete milestones. The results suggest that the CA-PMM is helping IT project managers meet project milestone dates. This is important because the completion of estimated project milestones will move the project forward to meet estimated project completion targets.

Table 4.5: Summary of Pre vs. Post CA-PMM IT Project Milestones

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | Average Total |
|---|---|---|---|
| **Average Delay of Milestone Completion (Days)** | 108.29 | 24.33 | 59.17 |

*Overall Project Completion*

Table 4.7 provides a summary of the pre and post CA-PMM IT project completion results. Nearly half of all pre CA-PMM IT projects experienced delays before the project began. Meanwhile, 10% of all post CA-PMM IT projects have

experienced start delays that can have impacts on the completion of the projects. I find this difference to be statistically significant (p-value 0.01). The results suggest that the CA-PMM is helping IT project managers start projects on time. This is important because a delayed start of an IT project will delay its completion date; thus, projects will unsuccessfully meet the estimated completion dates.

Table 4.6: Summary of Pre vs. Post CA-PMM IT Project Completion

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM |
|---|---|---|
| **Percent of Projects with Revised Start Dates** | 48% | 10% |

The evidence from my analysis suggests that the implementation of CA-PMM is having a positive impact on IT projects throughout the state. The average initial estimated project costs are lower than before. Even the additional costs for unavoidable events or project delays are lower than they were prior to CA-PMM implementation. The average delay of IT project milestones has improved at a dramatic rate since CA-PMM. Finally, IT projects have suffered from fewer kick-off delays, which will help the project remain on schedule.

# Chapter 5

# CONCLUSION

In this final chapter, I revisit the purpose of my thesis, analyze and draw conclusions about the effectiveness of the CA-PMM, discuss policy and political implications, and make recommendations. Lastly, I examine the limitations of my study and provide suggestions for future research.

## Purpose of this Study – Revisited

California is home to many of the world's leading technology companies that have shaped the way global businesses operate. However, California's state agencies have been slow to utilize improved IT infrastructure to enhance the delivery of services to Californians. Some critics suggest that California's governance system is incapable of adopting new technologies because it is outdated (Gunnison, 1997). Others suggest that the way California adopts new technologies prevents unfettered and wasteful spending, especially on incredibly expensive technology endeavors (McCormick, 1997). Regardless of the rhetoric, more California state agencies are adopting improved IT infrastructure to deliver services to Californians (Ortiz, 2013), thus driving the need for a reliable IT project management standard.

The Program Management Office (PMO) of the California Technology Agency (CaTA) has the difficult task of ensuring the successful completion of large IT infrastructure projects undertaken by state agencies. California state agencies are historically paper intensive institutions that have been slow to adopt improved IT infrastructure that can bring more effective and efficient services to Californians. The

trend toward investment in IT infrastructure to improve business practices will continue to grow for all state agencies. However, it is imperative that the CA-PMM policy provide project managers with a useful tool to ensure the successful completion of these IT projects.

The PMO of the CaTA has adopted the California Project Management Methodology (CA-PMM) to help carry out its mission to provide primary support for program and project planning, investment analysis, and project management (California Technology Agency, 2011). Although the CA-PMM is the "tool of the trade" for project managers at California state agencies, it was unclear whether the CA-PMM is an effective standard. My thesis set out to evaluate whether the CA-PMM standard is an effective tool to help project managers deliver successful IT projects.

## Analysis of CA-PMM

Is the CA-PMM an effective tool that can help project managers deliver successful IT projects? There has been minimal research conducted to evaluate the CA-PMM standard until now. As the research literature suggests, project management is not a perfect science that follows a rigid formula that will ensure the delivery of an IT project within the estimated cost and timeframe. Factors that the project manager has little control over may cause delays on perfectly managed and simple IT projects. However, an assessment of the CA-PMM as a statewide policy is valid to determine its effectiveness and usefulness.

This analysis is assessing the CA-PMM standard as a whole. Based on this methodology, a high-level assessment of the CA-PMM is valid and can provide better

information to state leaders and decision-makers about IT project costs and timeframes. If the goal is to bring California's governance infrastructure into the 21st Century, then this assessment of the CA-PMM can provide valuable information to state leaders and decision makers.

*Difference of Estimated and Revised Project Costs*

The cost difference between the pre and post CA-PMM IT projects is one of many ways to measure the effectiveness of the CA-PMM. The results indicate that the CA-PMM is having a positive impact on estimating project costs. Forty percent of the projects post CA-PMM had to increase estimated costs to complete the project, as compared to 91% of projects started before CA-PMM.

Table 5.1: Pre vs. Post CA-PMM IT Project Budget Changes

| | **Projects Started Pre CA-PMM** | **Projects Started Post CA-PMM** |
|---|---|---|
| **Percent of Projects that Revised Budget Amount** | 91% | 40% |

The impact translates into less unexpected costs for agency leaders and project managers, and allows project managers to provide agency leaders with better cost estimates for budgeting purposes. As a result, there will be more predictability in budget forecasting to incorporate these IT projects into the overall agency strategic plans. Furthermore, the impact of less unforeseen costs may reduce the public's frustrations and accusations of wasteful spending over multi-million dollar IT investments (The Sacramento Bee, 2013).

We have learned from the literature that any IT project can experience problems and delays. However, if the CA-PMM can lessen the occurrences of large unexpected costs, it can provide political capital for agency and state leaders to transition California's old governance infrastructure into a modern one.

*On-time Milestone Completion Rate*

The pre versus post CA-PMM IT projects show a stark contrast in the average delay of milestone completion. Based on the results, it appears that the CA-PMM is having a positive impact on milestone completion rates. The post CA-PMM IT projects showed a lower average delay for milestone completion at 24 days compared to 108 days for pre CA-PMM projects. This result implies that IT project managers will be more successful at meeting project milestones if they follow the CA-PMM standard.

Table 5.2: Pre vs. Post CA-PMM IT Project Milestones

| | **Projects Started Pre CA-PMM** | **Projects Started Post CA-PMM** |
|---|---|---|
| **Average Delay of Milestone Completion (Days)** | 108 | 24 |

The larger significance of this outcome is that state department leaders are better able to rely on the estimates provided by IT project managers. The existence of more accurate project milestones will improve oversight accountability and allow department leaders to assign resources appropriately. The best-case scenario is that IT project managers are better able to estimate milestone completion dates so that the delays in task completion do not cause severe delays in the project.

*Project Completion Projections*

Table 5.3 provides further input into this analysis. Projects must start and finish on time in order for the completion of projects to meet the estimated completion schedules. Since I only have access to information on IT projects that are ongoing, I am only able to analyze start date revisions. The results of this analysis show that the CA-PMM is having a positive impact on reducing start date revisions. Since the implementation of the CA-PMM, 10% of IT projects have experienced delayed start dates. In contrast, 48% of pre CA-PMM IT projects have experienced delayed start dates.

Table 5.3: Pre vs. Post CA-PMM IT Project Completion

| | Projects Started Pre CA-PMM | Projects Started Post CA-PMM | Grand Total |
|---|---|---|---|
| **Number of Projects** | 23 | 30 | 53 |
| **Number of Revised Project Start Dates** | 11 | 3 | 14 |
| **Percent of Projects with Revised Start Dates** | 48% | 10% | 26% |
| **Number of Revised Project End Dates** | 47 | 5 | 52 |
| **Percent of Projects with Revised End Dates** | 74% | 17% | 42% |

## Implications for the California Technology Agency

My thesis analyzed the impact that the CA-PMM is having on IT projects throughout the state. The ultimate goal of the project management standard is to provide project managers with a toolset to deliver successful IT projects. As a result, California

taxpayers will benefit from an improved government infrastructure and wisely invested tax dollars.

This thesis provides a "progress report" of sorts for the overall effectiveness of the CA-PMM standard. The available information on the California Technology Agency website does not present individual project data in a manner that can provide project-level analysis of its impact, but the aggregate statistics published do allow researchers to compare outcomes and milestones for projects before and after the implementation of CA-PMM.

The results from this study support the conclusion that the CA-PMM standard is having a positive effect on IT project cost and completion. There have been recent high profile IT project failures that have raised the ire of state legislators and the public (The Sacramento Bee, 2013, Senate Committee on Governmental Organization, 2010). However, my results suggest that legislators and the public do not have enough accurate information to base their assessments of IT projects overseen by the California Technology Agency.

## Policy Recommendations

This study on the California Project Management Methodology (CA-PMM) found evidence that suggests the new standard is helping to improve outcomes of IT projects throughout California. The results showed notable improvements after the implementation of the CA-PMM. While the results are positive, they must be considered with caution because they are not causal.

The results from this study support the continued use of CA-PMM and should be the impetus for future research on the impact that the CA-PMM is having on IT project outcomes throughout the state. The CA-PMM may in fact be the primary reason that such a vast difference occurred between the pre and post CA-PMM, resulting in millions of dollars and hours of time saved for California taxpayers. Nevertheless, given the preliminary nature of this thesis, further research on CA-PMM is necessary before a definitive conclusion is reached on its causal effect on IT projects throughout the state and its continued use and possible expansion.

## Limitations

The biggest limitation of this research is that it is not causal. In other words, though I compare projects before and after the implementation of CA-PMM, differences in the project outcomes may not necessarily be due to CA-PMM. Other changes may have caused the differences in project outcomes, or the differences may be due to random variation. By using t-tests to analyze changes from before and after CA-PMM implementation, I am able to estimate how likely the two sets of data are due to chance. However, this analysis does not aim to isolate a causal factor that has caused the improvement in IT project management outcomes after the implementation of CA-PMM.

This thesis looks at the CA-PMM from a program effectiveness standpoint. It does not examine the specific nuances or the project tasks that are in the CA-PMM. For instance, I was not able to gain a deeper understanding of how project managers utilize the Work Breakdown Structure (WBS) or the effectiveness of the cost-estimating tool that are part of the CA-PMM toolkit.

In addition, project manager skill-sets and capabilities are not universal traits. This is perhaps the most difficult variable to measure based on the data available. Although the California Technology Agency requires project managers to have a certain level of project manager qualifications, it does not regulate the quality of their qualifications. Technical knowledge and acumen are not equal and thus, some projects may benefit from better project managers or team members. Nonetheless, this variable is difficult to measure and may be a separate study that focuses on failed projects on an individual basis.

## Future Research

My study has started the conversation about the value of the CA-PMM. However, this thesis is limited to an overall analysis of the standard. Future research may provide more insight on the effectiveness of the curriculum within the CA-PMM standard, i.e. the effectiveness of the Work Breakdown Structure, the Complexity Analysis rating, etc. by surveying project managers regarding its usefulness.

A case study may provide insight on how best to implement complicated, multi-departmental IT project implementations. This study would be a case-by-case comparison of two or three highly complex and difficult IT projects that can provide valuable insight for future endeavors.

There are other avenues of research to explore. One possible topic of research would see if the CA-PMM needed to include other types of skills that IT project managers should know, such as the "soft skills" as referenced by Sukhoo that can improve the outcomes of IT projects (Sukhoo, 2005). The over-arching theme is to

improve the CA-PMM standard so that IT project managers can continue to deliver successful IT projects, perhaps improving the overall success rate of project milestones and completion times.

Appendix A: Detailed Project Information – Timelines

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **01** | California Highway Patrol | Computer Aided Dispatch (CAD) Replacement Installation | Pre | 7/22/2005 | 5/11/2006 | 1 | 8/29/2008 | Apr. 2013 | 8 |
| **02** | California Highway Patrol | Automated License Plate Recognition (ALPR) | Post | 7/1/2010 | | | 6/30/2012 | | |
| **03** | CA Costal Commission | Coastal Data Management System (CDMS) | Post | 10/1/2011 | | | 2/1/2013 | | |
| **04** | California Department of Corrections & Rehabilitation | Strategic Offender Management System (SOMS) | Pre | Jul. 2007 | | | Mar. 2013 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **05** | Department of Consumer Affairs, Boards and Bureaus | California Vehicle Inspection System (Cal-VIS) | Post | 11/2/2009 | 11/24/2009 | 1 | 9/25/2013 | 3/3/2014 | 1 |
| **06** | Department of Consumer Affairs, Boards and Bureaus | BreEZe | Post | Dec. 2009 | | | Jun. 2014 | | |
| **07** | Department of Consumer Affairs, Boards and Bureaus | Computer Based Testing (CBT) | Post | n/a | | | n/a | | |
| **08** | Department of Corporations | Department of Corporations Quality Network (DOCQNET) | Pre | Jan. 2010 | Sep. 2009 | 1 | Jun. 2012 | Jul. 2014 | 1 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **09** | Department of Education | California Longitudinal Pupil Achievement Data System (CALPADS) | Pre | 7/1/2005 | 7/1/2005 | 1 | 8/8/2008 | 12/21/2012 | 2 |
| **10** | Department of Education | Standardized Account Code Structure (SACS) System Replacement | Post | 3/18/2011 | | | 3/31/2015 | | |
| **11** | Department of Finance | Financial Information System for California (FI$Cal) | Pre | Jul. 2005 | Aug. 2005 | 1 | Aug. 2012 | TBD | 3 |
| **12** | Department of Fish & Wildlife | Automated License Data System (ALDS) | Pre | Aug. 2000 | | | Nov. 2002 | 8/20/2012 | 3 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **13** | Department of Health Care Services | California Medicaid Management Information System (CA-MMIS) | Post | n/a | | | n/a | | |
| **14** | Department of Health Care Services | Health Insurance Portability and Accountability Act (HIPPA) II | Post | 6/15/2001 | | | 6/30/2014 | | |
| **15** | Department of Health Care Services | Codes and Standards Automated System (CASAS) Re-Engineering | Post | 7/1/2012 | | | 2/26/2015 | | |
| **16** | Department of Industrial Relations | Senate Bill 863 Implementation Project (SBIP) | Post | 11/5/2012 | | | 1/14/2014 | | |
| **17** | Department of Insurance | Paperless Workflow | Pre | 7/1/2008 | 9/28/2009 | 1 | 6/30/2011 | 6/30/2013 | 1 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **18** | Department of Motor Vehicles | Information Technology Modernization (ITM) | Pre | 7/3/2006 | | | 5/24/2013 | | |
| **19** | Department of Motor Vehicles | Integrated Automated Knowledge Testing Expansion (IAKTE) | Post | 7/2/2012 | | | 3/11/2015 | | |
| **20** | Department of Motor Vehicles | Web-Enabled Customer Flow Management & Appointment Systems (WCFMAS) | Post | 7/2/2012 | | | 3/24/2016 | | |
| **21** | Department of Parks & Recreation | Public Safety Technology Modernization (PSTM) | Pre | Jul. 2007 | Mar. 2007 | 1 | Jun. 2010 | Sep. 2013 | 1 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **22** | Department of Public Health | California Healthcare Event & Reporting Tool (CalHEART) | Post | 7/1/2010 | | | 9/30/2011 | 3/7/2013 | 1 |
| **23** | Department of Public Health | Business System Upgrade Project (BSUP) | Pre | Jul. 2010 | | | Dec. 2011 | | |
| **24** | Department of Public Health | California Immunization Registry (CAIR) | Post | Dec. 2012 | | | Nov. 2015 | | |
| **25** | Department of Social Services | County Expense Claim Reporting Information System (CECRIS) | Post | 2/14/2012 | | | 5/12/2017 | | |
| **26** | Department of State Hospitals | Personal Duress Alarm System (PDAS) | Post | TBD | 8/1/2011 | 1 | 6/30/2015 | 12/1/2012 | 1 |
| **27** | Department of State Hospitals | Active Directory Restructuring (AD) | Post | 9/4/2013 | | | 8/31/2014 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **28** | Department of State Hospitals | Automated Staff Scheduling and Information Support Tool (ASSIST) | Post | 9/2/2013 | | | 8/29/2014 | | |
| **29** | Department of Toxic Substances Control | Toxics Information Clearinghouse | Post | Jul. 2010 | | | Aug. 2011 | | |
| **30** | Department of Transportation | Project Resourcing & Schedule Management (PRSM) | Pre | 7/1/2000 | | | 12/27/2002 | 5/24/2013 | 4 |
| **31** | Department of Transportation | Construction Management System | Pre | 7/1/2006 | | | 3/1/2010 | 9/30/2013 | 3 |
| **32** | Department of Transportation | Roadway Design Software | Pre | Jul. 2008 | 7/1/2008 | 1 | Jun. 2014 | Apr. 2016 | 1 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **33** | Department of Transportation | Electronic Permitting System (ePermits) | Post | 5/1/2011 | | | 6/1/2013 | | |
| **34** | Department of Veterans Affairs | Enterprise Wide Veterans Home Information System (EW-VHIS) | Pre | 12/11/2006 | 1/11/2007 | 1 | 12/31/2010 | 4/28/2014 | 3 |
| **35** | Department of Veterans Affairs | CalVet Connect | Post | 11/19/2012 | | | 6/30/2015 | | |
| **36** | Employment Development Department | Unemployment Insurance Modernization (UI-MOD) | Pre | FY 2003/2004 | Oct. 2003 | 1 | FY 2008/2009 | Aug. 2013 | 3 |
| **37** | Employment Development Department | Workforce System Network (WSN) | Pre | 3/2/2009 | | | 11/1/2010 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **38** | Employment Development Department | Alternate Base Period | Post | Nov. 2009 | May 2009 | 1 | Jun. 2011 | Jun. 2012 | 1 |
| **39** | Environmental Protection Agency | Unified Program Electronic Reporting | Post | 7/1/2009 | | | 10/1/2012 | | |
| **40** | Franchise Tax Board | Enterprise Data to Revenue (EDR) | Pre | 1/12/2009 | 1/10/2009 | 1 | 1/12/2015 | 12/31/2016 | 1 |
| **41** | Health & Human Services Agency | Case Management, Information and Payrolling System (CMIPS II) | Pre | 4/1/1999 | | | 1/1/2016 | 7/1/2015 | 2 |
| **42** | Health & Human Services Agency | Leader Replacement System (LRS) | Pre | Jul. 2005 | | | Jun. 2007 | Jul. 2009 | 2 |
| **43** | Health & Human Services Agency | Child Welfare Services New System (CWS-NS) | Post | Jul. 2013 | | | Sep. 2017 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **44** | Office of Emergency Services | Response Information Management System (RIMS) Replacement | Pre | Jun. 2010 | | | May 2011 | | |
| **45** | Peace Officer Standards & Training Commission | Test System Replacement | Post | 1/1/2012 | | | 7/31/2015 | | |
| **46** | Public Utilities Commission | Rail Safety and Security Information Management System | Pre | 10/1/2008 | | | 3/31/2011 | | |
| **47** | Secretary of State | VoteCal Statewide Voter Registration System | Pre | 8/3/2006 | | | 12/31/2009 | 6/30/2016 | 4 |
| **48** | Secretary of State | California Business Connect | Post | 7/1/2011 | | | 6/30/2017 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Estimated Project Start Date | Revised Project Start Date | Number of Revised Start Dates | Estimated Project End Date | Revised Project End Date | Number of Revised End Dates |
|---|---|---|---|---|---|---|---|---|---|
| **49** | State Board of Equalization | Centralized Revenue Opportunity System (CROS) | Post | 9/1/2010 | | | 7/30/2017 | 6/30/2017 | 1 |
| **50** | State Controller's Office | 21st Century Project | Pre | 7/1/2003 | May 2004 | 1 | 6/30/2008 | Dec. 2013 | 5 |
| **51** | State Personnel Board | Examination and Certification Online System (ECOS) | Post | Aug. 2011 | | | Dec. 2014 | | |
| **52** | Statewide Health Planning & Development | Responsive Electronic Application for California's Healthcare (CalREACH) | Post | Sep. 2011 | | | Aug. 2013 | | |
| **53** | Student Aid Commission | Dream Act | Post | 11/1/2011 | | | 6/30/2013 | | |

Appendix B: Detailed Project Information – Costs

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **01** | California Highway Patrol | Computer Aided Dispatch (CAD) Replacement Installation | Pre | $ 25,887,025 | $ 37,412,553 | $ 37,412,553 | $ 11,525,528 | $ 27,707,861 |
| **02** | California Highway Patrol | Automated License Plate Recognition (ALPR) | Post | $ 3,053,360 | $ 2,052,578 | $ 2,052,578 | $ (1,000,782) | $ 2,052,578 |
| **03** | CA Costal Commission | Coastal Data Management System (CDMS) | Post | $ 1,844,566 | | $ 1,844,566 | | $ 556,305 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **04** | California Department of Corrections & Rehabilitation | Strategic Offender Management System (SOMS) | Pre | $ 416,278,518 | $ 447,930,116 | $ 447,930,116 | $ 31,651,598 | $ 220,174,685 |
| **05** | Department of Consumer Affairs, Boards and Bureaus | California Vehicle Inspection System (Cal-VIS) | Post | $ 17,715,366 | $ 5,187,490 | $ 5,187,490 | $ (12,527,876) | $ 1,668,711 |
| **06** | Department of Consumer Affairs, Boards and Bureaus | BreEZe | Post | $ 27,540,364 | $ 45,771,735 | $ 45,771,735 | $ 18,231,371 | $ 10,735,742 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **07** | Department of Consumer Affairs, Boards and Bureaus | Computer Based Testing (CBT) | Post | $ 3,720,132 | | $ 3,720,132 | | $ 348,534 |
| **08** | Department of Corporations | Department of Corporations Quality Network (DOCQNET) | Pre | $ 9,554,718 | $ 10,287,945 | $ 10,287,945 | $ 733,227 | $ 423,204 |
| **09** | Department of Education | California Longitudinal Pupil Achievement Data System (CALPADS) | Pre | $ 14,410,524 | $ 30,103,669 | $ 30,103,669 | $ 15,693,145 | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **10** | Department of Education | Standardized Account Code Structure (SACS) System Replacement | Post | $ 5,943,205 | $ 1,612,320 | $ 1,612,320 | $ (4,330,885) | $ 819,517 |
| **11** | Department of Finance | Financial Information System for California (FI$Cal) | Pre | $ 137,917,331 | $ 616,805,643 | $ 616,805,643 | $ 478,888,312 | $ 95,369,923 |
| **12** | Department of Fish & Wildlife | Automated License Data System (ALDS) | Pre | | $ 25,834,603 | $ 25,834,603 | $ 25,834,603 | $ 17,062,436 |
| **13** | Department of Health Care Services | California Medicaid Management Information System (CA-MMIS) | Post | $ 458,591,055 | | $ 458,591,055 | | $ 98,137,544 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **14** | Department of Health Care Services | Health Insurance Portability and Accountability Act (HIPPA) II | Post | $ 80,304,848 | $ 30,777,467 | $ 30,777,467 | $ (49,527,381) | $ 9,770,239 |
| **15** | Department of Health Care Services | Codes and Standards Automated System (CASAS) Re-Engineering | Post | $ 5,979,875 | | $ 5,979,875 | | |
| **16** | Department of Industrial Relations | Senate Bill 863 Implementation Project (SBIP) | Post | $ 14,147,946 | | $ 14,147,946 | | $ 1,202,779 |
| **17** | Department of Insurance | Paperless Workflow | Pre | $ 10,785,565 | $ 10,535,561 | $ 10,535,561 | $ (250,004) | $ 10,653,099 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **18** | Department of Motor Vehicles | Information Technology Modernization (ITM) | Pre | $ 242,157,699 | $ 208,103,286 | $ 208,103,286 | $ (34,054,413) | $ 134,442,468 |
| **19** | Department of Motor Vehicles | Integrated Automated Knowledge Testing Expansion (IAKTE) | Post | $ 9,768,595 | | $ 9,768,595 | | $ 32,283 |
| **20** | Department of Motor Vehicles | Web-Enabled Customer Flow Management & Appointment Systems (WCFMAS) | Post | $ 15,726,965 | $ 15,726,965 | $ 15,726,965 | | $ 80,388 |
| **21** | Department of Parks & Recreation | Public Safety Technology Modernization (PSTM) | Pre | $ 10,942,885 | $ 12,543,379 | $ 12,543,379 | $ 1,600,494 | $ 4,293,918 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **22** | Department of Public Health | California Healthcare Event & Reporting Tool (CalHEART) | Post | $ 1,545,075 | $ 1,882,767 | $ 1,882,767 | $ 337,692 | $ 967,954 |
| **23** | Department of Public Health | Business System Upgrade Project (BSUP) | Pre | $ 2,814,193 | $ 3,308,891 | $ 3,308,891 | $ 494,698 | $ 36,000 |
| **24** | Department of Public Health | California Immunizatio n Registry (CAIR) | Post | $ 6,996,699 | | $ 6,996,699 | | |
| **25** | Department of Social Services | County Expense Claim Reporting Information System (CECRIS) | Post | $ 7,641,706 | $ 3,955,368 | $ 3,955,368 | $ (3,686,338) | $ 95,882 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **26** | Department of State Hospitals | Personal Duress Alarm System (PDAS) | Post | $ 47,888,223 | $ 4,668,976 | $ 4,668,976 | $ (43,219,247) | $ 3,204,683 |
| **27** | Department of State Hospitals | Active Directory Restructuring (AD) | Post | $ 2,260,205 | | $ 2,260,205 | | |
| **28** | Department of State Hospitals | Automated Staff Scheduling and Information Support Tool (ASSIST) | Post | $ 8,903,016 | | $ 8,903,016 | | |
| **29** | Department of Toxic Substances Control | Toxics Information Clearinghouse | Post | $ 1,350,173 | $ 1,837,240 | $ 1,837,240 | $ 487,067 | $ 610,628 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **30** | Department of Transportation | Project Resourcing & Schedule Management (PRSM) | Pre | $ 11,572,294 | $ 36,377,496 | $ 36,377,496 | $ 24,805,202 | $ 24,913,045 |
| **31** | Department of Transportation | Construction Management System | Pre | $ 23,611,843 | $ 27,122,428 | $ 27,111,428 | $ 3,510,585 | $ 14,681,180 |
| **32** | Department of Transportation | Roadway Design Software | Pre | $ 22,914,170 | $ 9,873,000 | $ 9,783,000 | $ (13,041,170) | $ 2,685,511 |
| **33** | Department of Transportation | Electronic Permitting System (ePermits) | Post | $ 2,718,135 | | $ 2,718,135 | | $ 164,467 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **34** | Department of Veterans Affairs | Enterprise Wide Veterans Home Information System (EW-VHIS) | Pre | $ 33,982,315 | $ 36,744,638 | $ 36,744,638 | $ 2,762,323 | $ 18,326,188 |
| **35** | Department of Veterans Affairs | CalVet Connect | Post | $ 1,269,291 | | $ 1,269,291 | | |
| **36** | Employment Development Department | Unemployment Insurance Modernization (UI-MOD) | Pre | $ 57,788,131 | $ 185,224,579 | $ 185,224,579 | $ 127,436,448 | $ 127,700,937 |
| **37** | Employment Development Department | Workforce System Network (WSN) | Pre | $ 13,153,063 | | $ 13,153,063 | | $ 5,230,950 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **38** | Employment Development Department | Alternate Base Period | Post | $ 8,353,457 | $ 522,000,000 | $ 522,000,000 | $ 513,646,543 | $ 16,158,148 |
| **39** | Environmental Protection Agency | Unified Program Electronic Reporting | Post | $ 5,869,475 | | $ 5,869,475 | | $ 2,965,525 |
| **40** | Franchise Tax Board | Enterprise Data to Revenue (EDR) | Pre | $ 317,058,810 | $ 522,000,000 | $ 522,000,000 | $ 204,941,190 | $ 101,752,994 |
| **41** | Health & Human Services Agency | Case Management, Information and Payrolling System (CMIPS II) | Pre | $ 126,550,997 | $ 393,204,090 | $ 393,204,090 | $ 266,653,093 | $ 200,613,481 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **42** | Health & Human Services Agency | Leader Replacement System (LRS) | Pre | $ 5,855,040 | $ 489,432,232 | $ 489,432,232 | $ 483,577,192 | $ 6,697,902 |
| **43** | Health & Human Services Agency | Child Welfare Services New System (CWS-NS) | Post | $ 392,740,024 | | $ 392,740,024 | | |
| **44** | Office of Emergency Services | Response Information Management System (RIMS) Replacement | Pre | $ 2,234,355 | | $ 2,234,355 | | $ 1,894,639 |
| **45** | Peace Officer Standards & Training Commission | Test System Replacement | Post | $ 5,460,685 | | $ 5,460,685 | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **46** | Public Utilities Commission | Rail Safety and Security Information Management System | Pre | $ 4,274,733 | $ 4,214,437 | $ 4,214,437 | $ (60,296) | $ 2,384,610 |
| **47** | Secretary of State | VoteCal Statewide Voter Registration System | Pre | $ 69,178,975 | $ 45,188,638 | $ 45,188,638 | $ (23,990,337) | $ 13,279,642 |
| **48** | Secretary of State | California Business Connect | Post | $ 23,729,033 | | $ 23,729,033 | | $ 1,111,276 |
| **49** | State Board of Equalization | Centralized Revenue Opportunity System (CROS) | Post | $ 279,212,495 | $ 269,417,267 | $ 269,417,267 | $ (9,795,228) | $ 4,880,973 |
| **50** | State Controller's Office | 21st Century Project | Pre | $ 132,059,078 | $ 373,400,679 | $ 373,400,679 | $ 241,341,601 | $ 258,424,890 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Original Project Budget (One-time & Ongoing) | Projects with Revised Budget Amount | Original & Revised Project Budget Total Amount | Difference of Revised Project Budget | Cumulative Total of Amount Spent on Projects To Date |
|---|---|---|---|---|---|---|---|---|
| **51** | State Personnel Board | Examination and Certification Online System (ECOS) | Post | $ 4,705,157 | | $ 4,705,157 | | $ 961,304 |
| **52** | Statewide Health Planning & Developme nt | Responsive Electronic Application for California's Healthcare (CalREACH) | Post | $ 1,456,306 | | $ 1,456,306 | | $ 300,886 |
| **53** | Student Aid Commission | Dream Act | Post | $ 1,889,850 | | $ 1,889,850 | | |

Appendix C: Detailed Project Information – Milestone Completion

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **01** | California Highway Patrol | Computer Aided Dispatch (CAD) Replacement Installation | Pre | 87.00% | 7 | 606 | 86.57 | 1 |
| **02** | California Highway Patrol | Automated License Plate Recognition (ALPR) | Post | 90.00% | 5 | 200 | 40.00 | |
| **03** | CA Costal Commission | Coastal Data Management System (CDMS) | Post | 20.00% | 2 | 29 | 14.50 | 1 |
| **04** | California Department of Corrections & Rehabilitation | Strategic Offender Management System (SOMS) | Pre | 100.00% | 6 | 649 | 108.17 | 2 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **05** | Department of Consumer Affairs, Boards and Bureaus | California Vehicle Inspection System (Cal-VIS) | Post | 50.00% | 8 | -707 | -88.38 | 6 |
| **06** | Department of Consumer Affairs, Boards and Bureaus | BreEZe | Post | 83.00% | 12 | 693 | 57.75 | 9 |
| **07** | Department of Consumer Affairs, Boards and Bureaus | Computer Based Testing (CBT) | Post | 92.00% | 2 | 332 | 166.00 | 7 |
| **08** | Department of Corporations | Department of Corporations Quality Network (DOCQNET) | Pre | 46.00% | 3 | 197 | 65.67 | |
| **09** | Department of Education | California Longitudinal Pupil Achievement Data System (CALPADS) | Pre | 95.00% | 8 | 1181 | 147.63 | 3 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **10** | Department of Education | Standardized Account Code Structure (SACS) System Replacement | Post | 82.00% | 2 | -161 | -80.50 | |
| **11** | Department of Finance | Financial Information System for California (FI$Cal) | Pre | 6.00% | 2 | 84 | 42.00 | |
| **12** | Department of Fish & Wildlife | Automated License Data System (ALDS) | Pre | 77.00% | 21 | 1327 | 63.19 | |
| **13** | Department of Health Care Services | California Medicaid Management Information System (CA-MMIS) | Post | 6.00% | | | | |
| **14** | Department of Health Care Services | Health Insurance Portability and Accountability Act (HIPPA) II | Post | 81.00% | 1 | 8 | 8.00 | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **15** | Department of Health Care Services | Codes and Standards Automated System (CASAS) Re-Engineering | Post | | | | | |
| **16** | Department of Industrial Relations | Senate Bill 863 Implementation Project (SBIP) | Post | 32.00% | 2 | 3 | 1.50 | |
| **17** | Department of Insurance | Paperless Workflow | Pre | 99.00% | 7 | 552 | 78.86 | |
| **18** | Department of Motor Vehicles | Information Technology Modernization (ITM) | Pre | 73.00% | 1 | -31 | -31.00 | 3 |
| **19** | Department of Motor Vehicles | Integrated Automated Knowledge Testing Expansion (IAKTE) | Post | 18.00% | | | | 2 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **20** | Department of Motor Vehicles | Web-Enabled Customer Flow Management & Appointment Systems (WCFMAS) | Post | 19.00% | 1 | 127 | 127.00 | |
| **21** | Department of Parks & Recreation | Public Safety Technology Modernization (PSTM) | Pre | 47.00% | 3 | 119 | 39.67 | 10 |
| **22** | Department of Public Health | California Healthcare Event & Reporting Tool (CalHEART) | Post | 93.00% | 7 | 101 | 14.43 | |
| **23** | Department of Public Health | Business System Upgrade Project (BSUP) | Pre | 21.00% | 3 | 609 | 203.00 | 8 |
| **24** | Department of Public Health | California Immunization Registry (CAIR) | Post | | | | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **25** | Department of Social Services | County Expense Claim Reporting Information System (CECRIS) | Post | 5.00% | | | | 5 |
| **26** | Department of State Hospitals | Personal Duress Alarm System (PDAS) | Post | 80.00% | 7 | 109 | 15.57 | |
| **27** | Department of State Hospitals | Active Directory Restructuring (AD) | Post | | | | | |
| **28** | Department of State Hospitals | Automated Staff Scheduling and Information Support Tool (ASSIST) | Post | | | | | |
| **29** | Department of Toxic Substances Control | Toxics Information Clearinghouse | Post | 99.90% | 11 | 430 | 39.09 | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **30** | Department of Transportation | Project Resourcing & Schedule Management (PRSM) | Pre | 68.00% | 6 | 87 | 14.50 | 9 |
| **31** | Department of Transportation | Construction Management System | Pre | 67.00% | 8 | 1094 | 136.75 | 1 |
| **32** | Department of Transportation | Roadway Design Software | Pre | 67.00% | 9 | 573 | 63.67 | 16 |
| **33** | Department of Transportation | Electronic Permitting System (ePermits) | Post | 25.00% | 5 | 387 | 77.40 | 8 |
| **34** | Department of Veterans Affairs | Enterprise Wide Veterans Home Information System (EW-VHIS) | Pre | 93.00% | 12 | 2089 | 174.08 | 4 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **35** | Department of Veterans Affairs | CalVet Connect | Post | | | | | |
| **36** | Employment Development Department | Unemployment Insurance Modernization (UI-MOD) | Pre | 90.00% | 25 | -16 | -0.64 | 22 |
| **37** | Employment Development Department | Workforce System Network (WSN) | Pre | 72.00% | 9 | 2256 | 250.67 | 11 |
| **38** | Employment Development Department | Alternate Base Period | Post | 94.00% | 6 | 123 | 20.50 | 6 |
| **39** | Environmental Protection Agency | Unified Program Electronic Reporting | Post | 63.67% | 4 | 433 | 108.25 | 4 |
| **40** | Franchise Tax Board | Enterprise Data to Revenue (EDR) | Pre | 35.00% | 1 | | | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **41** | Health & Human Services Agency | Case Management, Information and Payrolling System (CMIPS II) | Pre | 41.00% | | | | |
| **42** | Health & Human Services Agency | Leader Replacement System (LRS) | Pre | 0.00% | 3 | 444 | 148.00 | 0 |
| **43** | Health & Human Services Agency | Child Welfare Services New System (CWS-NS) | Post | | | | | |
| **44** | Office of Emergency Services | Response Information Management System (RIMS) Replacement | Pre | 33.00% | 2 | 1492 | 746.00 | 3 |
| **45** | Peace Officer Standards & Training Commission | Test System Replacement | Post | 20.00% | 8 | 122 | 15.25 | |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **46** | Public Utilities Commission | Rail Safety and Security Information Management System | Pre | 90.00% | 4 | 349 | 87.25 | |
| **47** | Secretary of State | VoteCal Statewide Voter Registration System | Pre | 5.00% | | | | 2 |
| **48** | Secretary of State | California Business Connect | Post | 0.00% | 1 | 55 | 55.00 | |
| **49** | State Board of Equalization | Centralized Revenue Opportunity System (CROS) | Post | 83.00% | 2 | 87 | 43.50 | 1 |
| **50** | State Controller's Office | 21st Century Project | Pre | 63.00% | | | | 32 |

| Project No. | Department Name | Name of Project | Project Started Pre or Post CA-PMM | Reported Project Completion Percentage | Number of Completed Milestones Reported | Number of Days Past Due for Completed Milestone | Average Delay of Milestone Completion (Days) | Number of Delayed Milestones Reported |
|---|---|---|---|---|---|---|---|---|
| **51** | State Personnel Board | Examination and Certification Online System (ECOS) | Post | 26.00% | 3 | 30 | 10.00 | 1 |
| **52** | Statewide Health Planning & Development | Responsive Electronic Application for California's Healthcare (CalREACH) | Post | 55.00% | 10 | 8 | 0.80 | |
| **53** | Student Aid Commission | Dream Act | Post | | | | | |

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