A Multi-Phase Research Program Investigating Project Management Offices (PMOs): The Results of Phase 1

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ABSTRACT

Over the last decade, the project management office (PMO) has become a prominent feature in many organizations. Despite the proliferation of PMOs in practice, our understanding of this phenomenon remains sketchy at best. No consensus exists as to the way PMOs are or should be structured nor as to the functions they should or do fill in organizations. In addition, there is no agreement as to the value of PMOs. Despite the importance of this phenomena and the lack of understanding, there has been very little research on this topic. A three-phase research program has been undertaken in order to develop a better understand of PMOs. This paper presents the research strategy, the overall program, and the results of the first phase of the research.

Keywords: project management office (PMO); survey results; research methods

Introduction

In recent years, many organizations have established PMOs. Dai and Wells (2004, p. 526) showed that PMOs first started to become popular in 1994 and that their number has been growing significantly since. Many books and articles on PMOs have been published in recent years, with the vast majority of the literature produced by practitioners and consultants promoting the implementation of PMOs. This literature is rational, self-evidently correct and normative, as is much of the project management literature (Williams, 2005).

Observations of PMOs in organizations contrast quite sharply with the image portrayed in the literature. The population of PMOs is characterized by very significant variation in:
• The structure of PMOs
• The roles assumed by PMOs
• The perceived value of PMOs.

Prior to the undertaking of the present research program, a reliable portrait of the population of PMOs was not available. In addition, an adequate explanation of the great variety has yet to be found.

The Definition of a PMO

A Guide to the Project Management Body of Knowledge (PMBOK® Guide) defines a PMO as:

> An organizational body or entity assigned various responsibilities related to the centralized and coordinated management of those projects under its domain. The responsibilities of the PMO can range from providing project management support functions to actually being responsible for the direct management of a project. (PMI, 2004, p. 369)

This definition is very close to the definition the authors adopted during this investigation. It highlights that PMOs are organizational entities and that their mandates vary significantly from one organization to the next. However, the present study makes a distinction between the multi-project PMO and the single-project PMO or "project office," which has responsibility for the management of one large project. The *PMBOK® Guide* definition and much of the literature on PMOs include both, and both are important phenomena worthy of

investigation. Multi-project PMOs and entities responsible for the management of a single project are quite different and can best be investigated separately. The scope of the present investigation includes only PMOs with mandates that cover many projects or "multi-project PMOs."

In part because of the great variety found among PMOs in different organizations, and in part because of the lack of both a consensus among practitioners and adequate descriptions in the literature, discussions on this topic tend to be characterized by diversity of opinion and confusion. Many people have been exposed to a limited number of PMOs and have concluded inappropriately that all PMOs are similar to the ones they have observed. The lack of consensus is understandable given (1) that the PMO is a relatively recent phenomenon, (2) that PMOs take on a great variety of forms and functions, and (3) that there has been a lack of systematic investigation. The present investigation employs a rather large definition of the PMO in order to capture the variety of form and function. For the purposes of this investigation, it is not necessary that the organizational unity be called a PMO.

PMOs in the Literature
Several books and papers have been published on PMOs in recent years.

The descriptions of PMOs in the literature are often summarized in typologies comprised of a small number of models. Dinsmore (1999) introduced the earliest typology of PMOs with four types, starting with a single project entity in which project management services are developed and used within this single project. The three other models in Dinsmore's typology are multi-project entities: project support office, project management center of excellence, and program management office. The Gartner Research Group's 2000 study (cited in Kendall & Rollins, 2003) proposed one of the most influential typologies of PMOs. The Gartner Group typology is comprised of three types of PMOs: (1) project repository, (2) coach, and (3) enterprise. Several authors have proposed typologies since the publication of the Gartner report, some of whom explicitly reference the earlier work. Within the space restrictions of the present paper, it is not possible to summarize these typologies. Table 1 presents a listing of some of the types of PMOs described in the literature, identified only by their names.

Some of the typologies identify the single-project entity of "project office," which is outside the scope of the present study. Each of the typologies proposes two, three, or four multi-project PMOs, organized in an ascending hierarchy. Different authors

use different properties to characterize the passage from one level to the next within their hierarchy. The following are among these properties:
- Staff functions or line functions with project managers included within the PMO
- Organizational scope: covering larger portions of the organization
- Level within the organizational hierarchy: from the lower operational level to the top level
- Influence and authority: from passive to supportive to enforcing standards to empowered
- Operational issues to strategic issues, often associated with a progression from project management to program and/or portfolio management
- Process-driven to business-driven
- Project management maturity (culture) within the organization: from non-supportive to fully-supportive culture.

Each type presented in these typologies is a model of a PMO. Any model is necessarily a simplification and a reduction of the complexities of organizational reality. Models are very useful, even necessary, to support both research and practice. However, the reduction of all or even most multi-project PMOs to two, three, or four types is a radical reduction. The present investigation does not use the models found in the literature as a starting point. The authors believe that

Author	Single-Project Entities	Multi-Project Entities			
Dinsmore (1999)	Autonomous Project Team	Project Support Office	Project Management Center of Excellence	Program Management Office	
Gartner Research Group		Project Repository	Coach	Enterprise	
Crawford (2002, p. 56)	Level 1: Project Control Office	Level 2: Business Unit Project Office	Level 3: Strategic Project Office		
Englund, Graham, & Dinsmore (2003)		Project Support Office	Project Management Center of Excellence	Program Management Office	
Kendall & Rollins (2003)		Project Repository	Coach	Enterprise	"Deliver Now"
Garfein (2005, p. 8)	Project Office	Basic PMO	Mature PMO	Enterprise PMO	

Table 1: Typologies of PMOs in the literature

it is useful and necessary to put these models aside and to investigate organizational reality directly in order to capture the diversity and the complexity of PMOs in practice.

The Multi-Phase, Multi-Method Research Program

The objectives of the research program are two-fold. The first objective is to produce a reliable description of the present population of PMOs. The second objective is to develop a better understanding of PMOs, of why they take on such a variety of forms, and of the dynamics surrounding their creation, transformation, and action in organizations.

It would be difficult to start from the present state of knowledge in which no reliable description of the phenomena is available to develop an adequate understanding of PMOs and their roles in organizations. The investigation of PMOs has, therefore, been organized into a three-phase research program. Each phase is a separate project with its own methodological approach. Successive phases build upon the findings of previous phases. This approach is motivated by the present lack of knowledge, by the great variety of forms and functions observed, and by the complexity of the organizational phenomena under investigation. The authors adopted the approach suggested by Van de Ven (in press) on engaged scholarship, where the complexity of the subject merits looking at the problem from various angles.

The program has been organized into the following phases:

1. A descriptive survey of 500 PMOs aimed at providing a realistic portrait of the population of PMOs in organizations (2005).
2. The development of a rich conceptual model to guide further investigation (2006).
3. Four in-depth case studies aimed at understanding the dynamics surrounding PMOs in their organizational context (2006).
4. A confirmatory study to validate the understanding that will emerge from the previous two years work and modification of the model produced in phase 2 (2007).

At the time of this writing, the survey in phase one has been completed. The results are reported in the present paper. The conceptual model has been developed (Aubry, Hobbs, & Thuillier, in press). Data collection for the four case studies has been completed and is in the early stages of analysis. The following paragraphs present each phase in more detail.

Phase 1: A Descriptive Survey of 500 PMOs

Each of the 500 survey responses describes one PMO and its context. Each is a snapshot of a PMO as it was at the time of the survey investigation. The 500 snapshots were analyzed to:

1. Provides a description of the total population and variations in PMO structure, role, and perceived value.
2. To identify common configurations or models that describe significant numbers of PMOs.
3. To identify relationships between the variability of PMOs and the variability of their contexts.
4. To identify correlations between the characteristics of PMOs and their perceived value.

A descriptive survey with a large sample is an adequate methodology for describing a population. The primary result of phase 1 was the production of such a description of the population, a description characterized by extreme variety. If the majority of the population can be described by a small number of configurations or models, the analysis of survey data can identify these. However, the present investigation was unable to reduce the population to a small number of configurations.

The survey instrument collected contextual data, which was analyzed to identify statistical associations between PMO characteristics and contextual variables. Intuitively, PMOs can be thought to vary in different contexts and the context can provide at least a partial explanation for the variability found within the population of PMOs. However, no such statistical associations were found.

The survey data was largely descriptive. However, the survey instru-ment did include questions as to the perceived value of each PMO. Statistical analysis revealed that some characteristics of PMOs are associated with more highly valued entities. The statistical associations are quite strong and provide some insight into the dynamics surrounding highly valued PMOs. However, they provide only a partial explanation of the performance of PMOs and their contributions to organizational performance.

There are advantages and inconveniences with any methodological approach. Several possible explanations can be provided as to why the analysis of survey data does not provide an adequate explanation of such phenomena, as is the case here. First, the survey data is limited to the questions on the survey instrument. It is possible that statistical associations exist between PMO characteristics and contextual variables not included in the survey instrument. Second, the survey only provides descriptive snapshots. It does not reveal the dynamics surrounding the PMO and its evolution over time. The analysis of survey data gathered at one point in time is also limited in that it is very difficult, if not impossible, to determine the underlying causal relationships. In the present survey, it is not clear why PMOs with certain characteristics are perceived better than others. Phases 2 and 3 were designed to improve our understanding of the PMO phenomenon.

Phase 2: The Development of a Rich Conceptual Model to Guide Further Investigation

Phase 1 provided a description of the population of PMOs but did not provide an adequate understanding of the dynamics surrounding the PMO nor did it identify the major sources of variability. Phases 2 and 3 of the research program are designed to overcome the shortcomings of a large sample descriptive survey. Here, the PMO is not considered as a standalone entity but rather as an important structural element of the organization in which it is implemented. The unit of analysis passes thus from the PMO to the organization that encompasses it. In

this perspective, the PMO is seen as the gateway into the organization in order to study the dynamics of project management in the organizational context and the role of the PMO in these dynamics. "The critical task is to adopt and use the models, theories, and research methods that are appropriate for the research problem and question being address" (Van de Ven, in press).

Given the complexity and the richness of the subject being studied and the exploratory nature of the investigation, a constructivist ontology in which the PMO is conceptualized as a dynamic constructed entity has been adopted for phases 2 and 3 of the research program. It is not the purpose of the present paper to provide a complete description of the rich conceptual model that has been developed (Aubry, Hobbs, & Thuillier, in press). However, it is important to understand the basic premises upon which the model is based, as these condition the balance of the research program.

The conceptual model is based on the following elements:

- Organizational structures are conceptualized as the result of a dynamic strategizing/structuring process (Pettigrew, 2003).
- An historical and contextual perspective (Hughes, 1987) is adopted for the examination of both:
  - The host organization
  - The PMO or PMOs.
- The dynamic relationships between the PMO and its host organization are conceptualized as co-evolutionary (Van de Ven & Garud, 1994).
- Network structure approach (Hagström & Hedlund, 1999) and actor network theory (ANT) (Callon & Law, 1989) are borrowed from the field of sociology. Both are used to depict the PMO as a network, the former in its structural aspect, and the latter in examining the relationships among the actors involved.
- The conceptualization of the organizational contribution of the PMO is based on a "competing values approach." In this approach, organizational contribution is seen as a subjective construct rooted in values and preferences of stakeholders

(Cameron & Quinn, 1999; Morin, Savoie, & Beaudin, 1994; Pettigrew, 2003). The model includes four representations intended to provide an overall view of organizational project management performance. The *rational goals* representation integrates economic value to measure profit, project management efficiency, and return on investment. The *open system* representation contains variables that measure adaptation and growth. The *human relations* representation introduces considerations of human resource development, cohesion, and morale that are almost invisible in corporate evaluation. The *internal process* representation captures the measures related to corporate processes linked to project management such as program and portfolio processes and knowledge management processes.

The theoretical model developed in phase 2 has been used as the basis for phase 3.

Phase 3: In-Depth Case Studies Aimed at Understanding the Dynamics Surrounding PMOs in Their Organizational Context

In-depth case studies are particularly well adapted to subjects as complex as the one under investigation here, especially when the study is exploratory, as is the case here. Both the survey results from phase 1 and the conceptual model developed in phase 2 were drawn upon in the design of the research instruments for phase 3. These included both interview guides and questionnaires. Extensive data was gathered in each of four organizations in order to produce a rich description of the organization, its PMO or PMOs, and their joint evolution. Three types of data were gathered:
1. Company documents were collected.
2. In-depth, semi-structured interviews were conducted, recorded, and transcribed with multiple respondents with different organizational roles. Each interview gathered both factual and perceptual information.
3. Two questionnaires were developed and used. These included a question-

naire based on the survey instrument from phase 1 to which several questions were added, and a questionnaire addressing the issue of the organizational contribution of PMOs.

The analysis of data from multiple sources provides a rich, detailed, and reliable description of each organization and its PMO or PMOs in their specific context as they evolved together over time. At the time of this writing, the data collection activities have been completed and the analysis is under way.

Phase 4: The Confirmatory Study to Validate the Understanding That Will Emerge From the Previous Two Years Work and Modification of the Model Produced in Phase 2

The rich data and in-depth analysis in phase 2 is expected to produce a better understanding of PMOs in these four organizations. The strategy for phase 4 is to draw upon the results of the first three phases and to conduct investigations to both complete and to validate the understanding that will emerge from the analysis of both the survey and case study results analyzed together. It is too early to be able to describe in detail the exact nature of the confirmatory study that will be carried out in 2007. The balance of the present paper is devoted to the presentation and discussion of the methodology and the results of the survey in phase 1. A more complete presentation of the results can be found in Hobbs (in press).

Detailed Methodology
for the Survey in Phase 1

Because there has been very little empirical research on PMOs, a reliable portrait of the population of PMOs is not available. The objective of this research is to provide such a portrait. Providing a descriptive portrait is typically an objective of exploratory research into a previously unexplored topic. In this sense, the present research should be considered as descriptive and exploratory. Phase 1 of the research program is a project in and of itself.

This project took place in four steps over a two-year period.

Step 1 was to undertake a preliminary and systematic investigation of 30 PMOs in different organizations and different industries. This was done in 2004. The objective was to provide a preliminary validation of the hypothesis that the structures, roles, and legitimacy of PMOs vary significantly from one organization to the next, and to gather data that would contribute to the production of a richer and more reliable portrait of the reality of PMOs. To this end, a preliminary version of the survey questionnaire was developed and tested. Feedback sessions were held with informants from the organizations to validate and discuss these preliminary results. The preliminary investigations produced an image of PMOs characterized by extreme variety in structures, roles, and legitimacy, while at the same time validating and significantly enriching the questionnaire, which became the survey instrument. The results from step 1 were enlightening but the sample is small. It does not lend itself to statistical analysis and it is impossible to judge how representative this sample is of the general population.

Step 2 was undertaken to validate and further enrich the preliminary results from step 1. A web-based survey instrument was designed and tested. The questionnaire had already been validated and tested in step 1, however three respondents from different industries tested the web-based version and a small number of minor adjustments were made. The instrument was designed so that each respondent describes one PMO. The questions were descriptive until the end of the instrument, where a small number of more evaluative questions completed the instrument.

Step 3 was the data collection phase. The invitation to participate was available on the Project Management Institute (PMI) website. The authors solicited respondents through several project management networks including the PMI Montreal Chapter's Community of Practice on PMOs, the PMI Southern Ontario Chapter, PMForum, the American Society for the Advancement of Project Management, and the firms

Human Systems and Valence—and with the collaboration of colleagues from the University of Limerick, Athabasca University, University of Technology Sydney, and ESC-Lille. The authors wish to thank all of those whose collaboration made this project possible. A total of 500 usable responses were received.

The respondents were distributed among organizational roles as follows:
• Project managers   38%
• Managers of PMOs   23%
• Professionals in PMOs   11%
• Executives and other managers 10%
• Consultants   8%
• Others   10%

The geographical distribution of respondents was as follows:
• Canada   43%
• United States   26%
• Europe   16%
• Other   15%

The respondents work in a very wide variety of industries. The largest proportions came from the following:
• IT/IS   14%
• Financial services   14%
• Telecommunications   10%

Step 4 consists of data analysis and presentation of results, of which this paper is a part.

The Survey Results
The Name of the Entity
The majority of entities described in this study were called "project management offices." However, many of these organizational entities were given a great variety of other names. The distribution of names is presented in Table 2.

Some of the labels used to describe these organizational entities deserve comment. Interestingly, 2% of respondents described entities that exist in their organizations but that have no official label and, therefore, do not appear on the organizational chart. It is quite plausible that these entities have been created to fill a real need, but that their existence has not yet been made official. It is also plausible that, because of a previous failed attempt to implement a PMO,

or for some other reason, some PMOs are maintaining a low profile.

The number of entities bearing the title "project office" is certainly much greater than these results indicate. This label is often used to name an entity responsible for the management of a single large project. The survey instructions asked specifically that informants not refer to this type of unit in responding to the questionnaire. An examination of the 2% of responses describing entities with this label indicates that these were multi-project entities similar to those labeled PMO. They have, therefore, been included in the sample.

A total of 12% of responses described entities labeled as program management offices. This group of responses was compared to those labeled as project management offices and no statistically significant differences were found between the two. The program management function is more important for those labeled program management office, but the difference is not statistically significant. Program management is, therefore, very often part of the role of the PMO, whether it is labeled a project or a program management office. The analysis that follows is, therefore, based on the entire sample, including both labels.

One or Several PMOs
Each respondent to the survey described one particular PMO. However, some organizations have more than one. In 53% of the cases, the respondents indicated that the PMO described is the only one in the organization. Of these, 30% were described as central PMOs and 23% as located in a business, functional, or regional unit. Another 25% reported that other PMOs exist but have no relationship with their PMO or its mandate. Finally, 22% described a PMO that is related to at least one other PMO in their organization.

The Age of PMOs
Most PMOs have two characteristics in common; they tend to be young and to have a small staff. Apart from these two points in common, PMOs vary enormously one from the other. PMOs have

Entity	Percentage
Project Management Office	59%
Name containing the term "project" and somewhat similar to project management office (e.g., project department)	4%
Project Support Office	7%
Project Office	2%
Program Management Office	12%
Center of Excellence	2%
No name	2%
Other (a great variety with none greater than 1%)	12%

Table 2: Names of organizational entities

been popular since the mid- to late-1990s. Surprisingly, 54% of PMOs in existence today were created in the last two years, according to data from 2005. The Interthink Consulting survey (2002, p. 12) showed the same result: half of the PMOs were less than two years old in 2002. Two phenomena are at work producing this result. First, new PMOs are being created at a relatively high rate. Second, PMOs are being shut down or radically reconfigured at almost as fast a rate. The result is a population dominated by PMOs that have only been in existence in their present form for a few years, as shown in Figure 1.

PMO Staff
Most PMOs have very little in the way of staffing. Figure 2 shows the staffing levels of PMOs expressed in full-time equivalents, including the person responsible for the PMO, but excluding the project managers. This staff is overhead, and organizations are very reluctant to create overhead expenses. The issue of the cost of overhead is a key issue for PMOs, creating a somewhat paradoxical situation in which the PMO is asked to take on many functions with few resources.

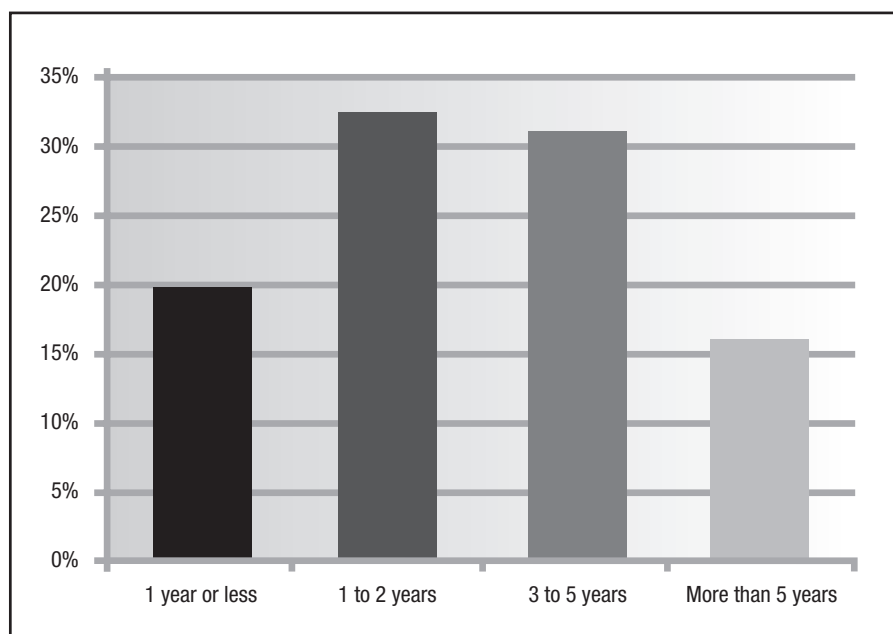As this data shows, the vast majority of PMOs have been recently

created or restructured. Most have very little staff other than the project managers. PMOs have very little else in common. Quite to the contrary, great variety characterizes the population of PMOs described in this survey. On some characteristics, the population displays distributions that are close to being either normal or skewed toward one extreme. In many cases the variance is high. On other variables, the distributions are almost bipolar, with most PMOs at one extreme or the other of the distribution and few in the middle ground.

The Decision-Making Authority of the PMO
The distribution of decision-making authority is close to a normal distribution, but with very high variance, as shown in Figure 3. PMOs in a passive or supporting role with little or no decision-making authority make up 41% of the sample. At the other extreme, 29% have considerable or very significant authority to make decisions to allocate resources, set priorities, or initiate, change, or cancel projects. This illustrates the great variety of roles different organizations assign to their PMOs.

The Allocation of Projects and Project Managers to PMOs
The variation among PMOs as to the percentage of projects and project managers found within their structures is even more extreme. These distributions, shown in Figures 4 and 5, respectively, show bipolar distributions with more PMOs at each extreme than in the middle ground.

In different organizations, the answer to the question "Are project managers grouped within the PMO?" received radically different responses: 31% of organizations reported that they group 100% of the project managers in the PMO, while 29% of PMOs had no project managers. These two extremes corresponded to PMOs that are either strictly a staff function with no project managers, or a line function with responsibility for the active management of projects in the hands of their project managers.
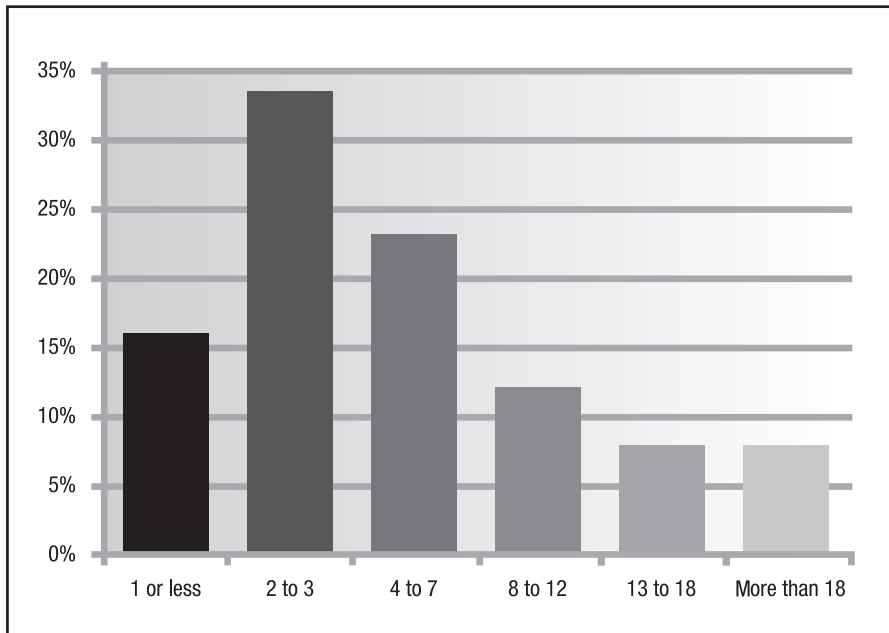

Figure 1: Age distribution of PMOs

Figure 2: Personnel of PMOs excluding project managers (full-time equivalents)
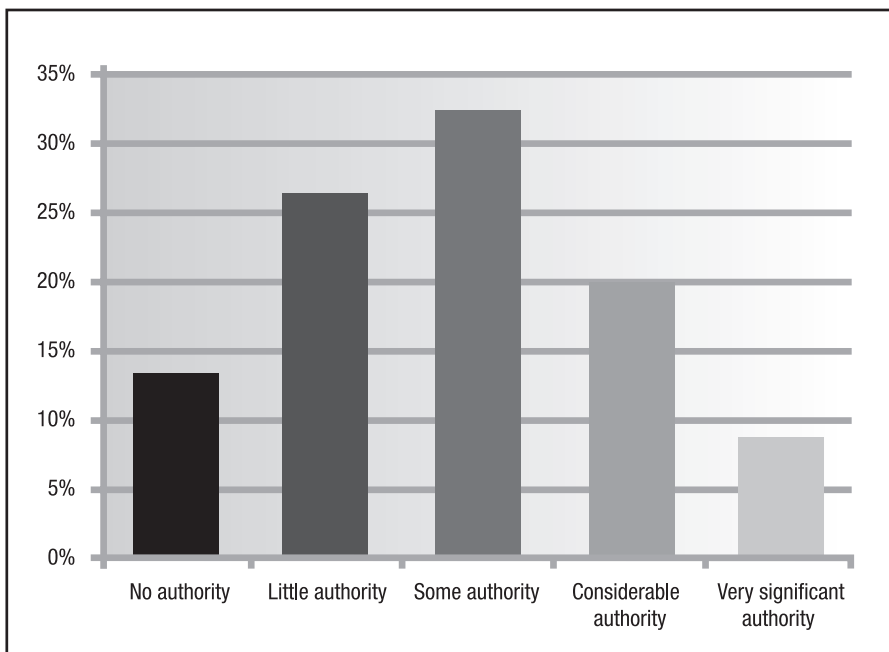

Figure 3: Decision-making authority of PMOs

An alternative way of expressing this extreme variation is to note that 46% of PMOs had less than 25% of the project managers within their structure, 40 % had more than 75%, and only 14% had between 25% and 75%.

The percentage of projects that are within the PMO's mandate is also extremely varied. Figures 4 and 5 show the extreme variety in the way organizations structure their PMOs. This variety contrasts with the literature on PMOs that tends to oversimplify reality. Given the extreme variety of forms that PMOs take on in reality, any general statement claiming to describe the decision-making authority of PMOs or the allocation of project managers or projects to PMOs should be viewed critically.

The Organizational Roles of PMOs
PMOs fill many different roles or functions in different organizations. The interchangeable terms "role" and "function" are used here to identify the content of the PMO's mandate within the organization. A list of roles or functions that are part of the mandates of PMOs was derived from preliminary investigations of a smaller sample of PMOs and from a review of the literature. A large number of different functions were identified. The final list contained 27 functions. Several of these functions were added during the process of pre-testing the questionnaire. Within the survey, respondents were asked if their PMO filled any functions not included in this list. An analysis of the responses did not identify any functions important for more than a very small number of PMOs. A large number of respondents indicated that the list is complete, a result that can be seen as a validation of the list of 27 functions of PMOs.

The respondents to the survey reported the importance of each of these functions for their PMO using a scale ranging from 1 (*not important at all*) to 5 (*very important*). Table 3 shows the percentage of PMOs in which each function was scored either of considerable importance or very important.

In the minds of many practitioners, PMOs were associated with particular roles or functions. It was not uncommon to hear statements such as, "A PMO is an entity that develops and implements a standardized project management methodology." Table 3 confirms that 76% of PMOs are heavily involved in this function. But to define PMOs by associating them with a particular function or group of functions is out of line with organizational reality. All 27 functions are important for significant numbers of PMOs, and 21 of the 27 are important for at least 40% of PMOs. This result again illustrates the extreme variety found among different PMOs in different organizations, and the difficulty in providing a simple and accurate description of what they are and what roles they fill.

It may seem surprising that 50% of PMOs consider monitoring and controlling the performance of the PMO itself as important. However, this result is consistent with, and likely a
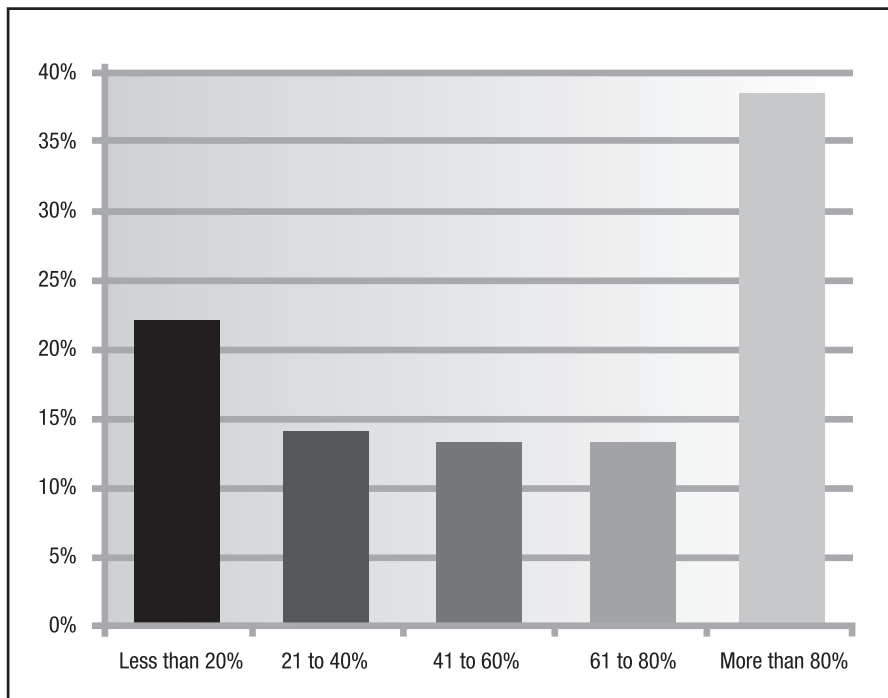
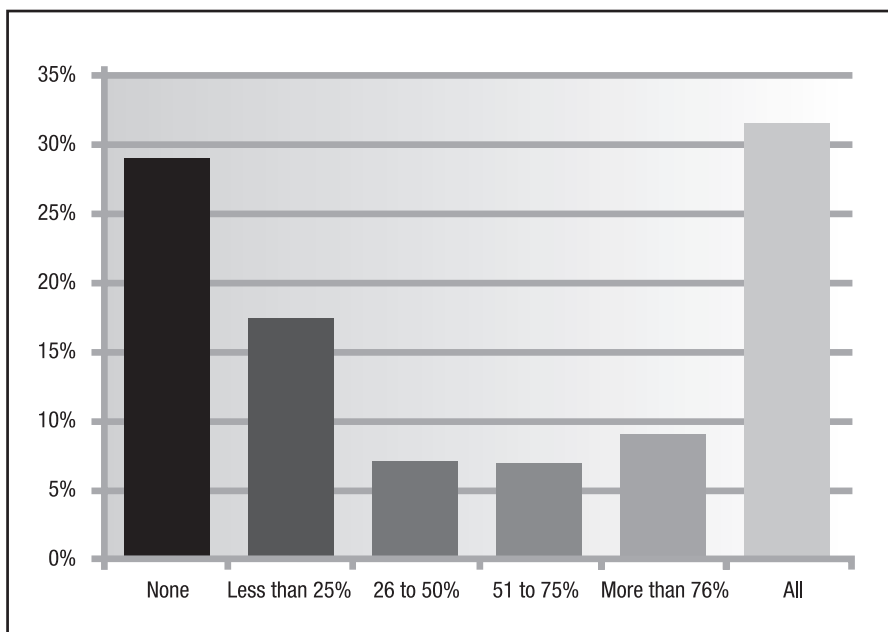**Figure 4:** Percentage of projects within the mandate of the PMO

Figure 5: Percentage of project managers within PMO

ature. Many members of the community are as yet unfamiliar with this practice, which may explain why it is considered relatively less important.

Groups of Functions

Analyzing 27 different functions is quite a detailed task. Identifying groups of functions greatly simplifies interpretation and use of this data. This can be done conceptually by identifying practices that are logically related. For example, reporting project status to upper management requires that project performance be monitored, which can best be done with a project information system and a project scorecard. These four functions are thus logically related. One would expect to find that PMOs that fill one of these functions would also have a tendency to fill the others.

The tendency to fill functions in groups can also be identified and measured through statistical associations. Factorial analysis was used to identify such groupings. Functions that are grouped together through factorial analysis are tightly associated statistically with each other, and statistically independent from the other functions and groups of functions. These independent groups constitute the dimensions of the fundamental underlying structure. The factorial analysis identified five groups of functions. Each group was examined to ensure that it was internally consistent in both conceptual and practical terms.

These groups show the structure underlying the many roles filled by PMOs in organizations. Identifying groups of functions that are both conceptually and statistically sound has very practical consequences. The long and disorganized list of functions is replaced by a simple structure of underlying high-level roles or functions. These are presented next in decreasing order of the average importance of the functions included in the group, which are indicated on a scale of 1 to 5. The average importance is indicated in parentheses for each group. Within each group, the functions are presented in decreasing order of average importance.

consequence of, the fact that the value of PMOs and the justification of the expenses they generate are often brought under scrutiny and questioned. Many PMOs are under pressure to justify their expenses and show value for money.

Members of the project management community recognize most of the functions listed in Table 3 very easily. However, some functions have only

recently come into prominence. Program management (48%) and portfolio management (49%) are shown as quite important despite the fact that they only recently became the focus of much attention with the development of "enterprise or organizational project management." Benefits management (28%) is an even more recent phenomenon in the project management community and liter-

PMO Function	% of PMOs Where Important
Report project status to upper management	83%
Develop and implement a standard methodology	76%
Monitor and control of project performance	65%
Develop competency of personnel, including training	65%
Implement and operate a project information system	60%
Provide advice to upper management	60%
Coordinate between projects	59%
Develop and maintain a project scoreboard	58%
Promote project management within organization	55%
Monitor and control performance of PMO	50%
Participate in strategic planning	49%
Provide mentoring for project managers	49%
Manage one or more portfolios	49%
Identify, select, and prioritize new projects	48%
Manage archives of project documentation	48%
Manage one or more programs	48%
Conduct project audits	45%
Manage customer interfaces	45%
Provide a set of tools without an effort to standardize	42%
Execute specialized tasks for project managers	42%
Allocate resources between projects	40%
Conduct post-project reviews	38%
Implement and manage database of lessons learned	34%
Implement and manage risk database	29%
Benefits management	28%
Networking and environmental scanning	25%
Recruit, select, evaluate, and determine salaries for project managers	22%

Table 3: PMO functions in decreasing order of importance

Group 1: Monitoring and Controlling Project Performance (3.82)

The group of functions related to the monitoring and controlling of project performance is the most important group. This group includes both the monitoring, controlling, and reporting of project performance and the management of the computer-based tools to do these tasks. PMOs with these functions are providing for the information managers' needs to maintain visibility and control the performance of projects for which they are responsible. In so doing, the PMO is support-ing project governance functions. The interrelatedness of these functions was previously discussed.

- Report project status to upper management
- Monitoring and control of project performance
- Implement and operate a project information system
- Develop and maintain a project scoreboard.

Group 2: Development of Project Management Competencies and Methodologies (3.54)

The group of functions most tradition-ally associated with PMOs includes functions dealing with tools and methodologies and with competency development. This group is composed of the following functions:

- Develop and implement a standard methodology
- Promote project management within the organization
- Develop competency of personnel, including training
- Provide mentoring for project managers
- Provide a set of tools without an effort to standardize.

The development and implemen-tation of tools and methodology and the provision of project management training and mentoring are the func-tions most people associate with PMOs. The PMO with these functions is often in the role of promoting the use of the methodology, the develop-ment of competencies, and project management in general. This group thus constitutes a coherent set of func-tions that reinforce one another. This reinforcement is the practical reality behind the statistical phenomenon identified by the factorial analysis.

Group 3: Multi-Project Management (3.23)

Some PMOs have mandates to man-age whole sets of projects in a coordi-nated fashion, which often involves program or portfolio management. These have become important aspects of project management, as signaled by PMI with the publication of the *Organizational Project Management Maturity Model (OPM3®)* (PMI, 2003) and the publication of standards on program and portfolio management (PMI, 2006a, 2006b). The coordina-tion of interdependences within pro-grams and portfolios is a central issue in multi-project management, as can be seen from the functions in this group:

- Coordinate between projects
- Identify, select, and prioritize new projects
- Manage one or more portfolios
- Manage one or more programs
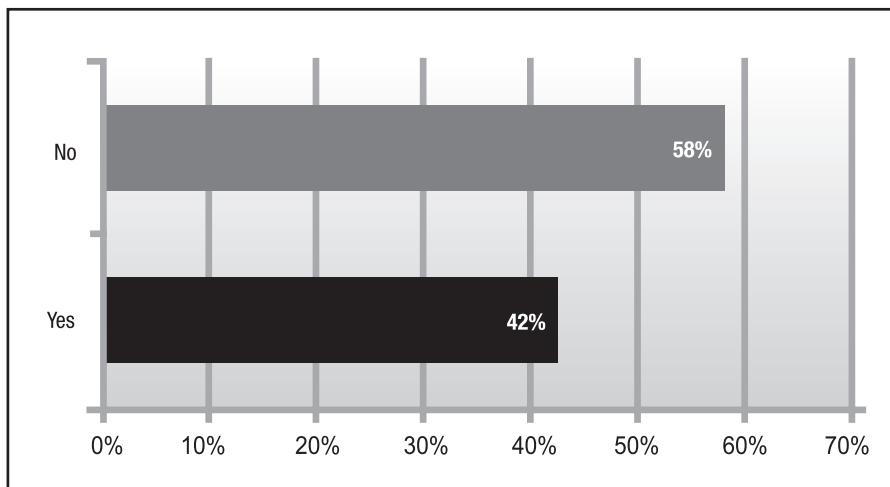- Allocate resources between projects.

Figure 6: "Has the relevance or even the existence of the PMO been seriously questioned in recent years?"

Group 4: Strategic Management (3.06)
There has been a tendency in recent years for project management in general, and PMOs in particular, to become more involved with issues of strategic alignment and to become more closely tied to upper management. The factor analysis reveals that the following group of functions related to strategic management constitutes one of the underlying dimensions of PMO roles:
• Provide advice to upper management
• Participate in strategic planning
• Benefits management
• Network and provide environmental scanning.

Involvement in these functions brings project management and the PMO closer to upper management. Networking and providing environmental scanning are used to keep abreast of current development so as to give up-to-date advice to upper management. The survey showed that these functions are more typical of central PMOs.

Group 5: Organizational Learning (3.00)
Organizational learning has been a very important topic in the management literature and practice in recent years. Some PMOs are actively involved in organizational learning through the following group of functions:
• Monitor and control the performance of the PMO
• Manage archives of project documentation
• Conduct post-project reviews

• Conduct project audits
• Implement and manage a database of lessons learned
• Implement and manage a risk database.

The last four functions in this group are very directly related to organizational learning. An examination of Table 3 shows them to be among the functions viewed as least important. From this it can be seen that, although organizational learning is of considerable importance, it is often seen as less important than other functions more directly related to operational or strategic issues.

The first two functions in this group are related to organizational learning, but can also be deployed in the pursuit of other objectives. Archiving project documentation has important operational aspects. The function to "monitor and control the performance of the PMO" can be seem as part of the learning feedback loop, and thus as closely related to the other organizational learning functions in this group. Recent interviews with PMO personnel have revealed that some PMOs specifically use the evaluation of the performance of their PMO in an organizational learning perspective. It is, however, conceivable that the measurement of PMO performance may also be done in response to questioning of the expenses generated by the PMO. The overall average importance of this group is influenced positively by the importance these first two

functions may have for objectives not directly related to organizational learning. Thus, the average importance of this group may overstate the overall importance of organizational learning for PMOs. Organizational learning is, however, important for a significant number of PMOs. Project management in general and PMOs in particular are participating in the general trend toward the increased importance of organizational learning in the knowledge economy.

Additional Functions Not Included in the Groups of Functions
The factorial analysis produced the five groups of functions previously presented. Three functions not included in these groups complete the list of 27 functions identified in this study. These three functions are excluded from the groups previously listed, not because they are not important, but because their presence is neither statistically nor conceptually related to these groups. The remaining functions are presented here in decreasing order of importance.

Execute Specialized Tasks for Project Managers (e.g., Prepare Schedules) (3.05)
Many PMOs provide specialized services to project managers and project teams. In order to execute these tasks, PMOs maintain specialized resources on their staff. The preparation of schedules is a common example, but such services can include many other tasks, such as contract and risk management.

Manage Customer Interfaces (2.84)
Some PMOs have the responsibility for managing customer interfaces. Responsibility for this activity depends to a great extent on the type of customer. Not all PMOs are in a position to fill this role. On the average, managing the customer interface is more important for PMOs with customers that are external to the organization. A PMO responsible for all the projects for a given customer may well have an important role to play in managing this customer interface. A PMO responsible for an outsourcing contract is an example of this.

Recruit, Select, Evaluate, and Determine Salaries for Project Managers (2.35)
This is the least important function for PMOs, but it remains important for 22% of PMOs. The human resource (HR) department in most organizations carries out these HR activities, but the involvement of a number of PMOs in these activities is considered important in some contexts. The PMOs fit into very different organizational realities regarding HR management relative to project managers.

Implications for Theory and Practice
The existence of a statistical and conceptual link between two or more functions does not mean that they are, or should always be, implemented together. The statistical and conceptual links are too weak for this to be the case. Organizations must use considerable judgment when deciding which functions the PMO is to be mandated to fill.

On average, the monitoring and controlling of project performance is the most important group and the lessons learned group the least important. The rank ordering of the groups of functions may be misleading. All are important, and the differences among them are small. In any particular context, any one of them may be the most important. However, the number of functions in each group varies. In addition, the relative importance of the different functions in each group varies considerably, as can be seen from Table 3. This reinforces the need to adapt to the organizational and strategic context when deciding which functions to include within the mandate of a particular PMO.

The fact that the underlying high-level functions are statistically independent of each other is an indication that they identify a fundamental or deep structure. The identification of this underlying structure among PMO functions has profound consequences for both theory and practice. From both points of view, a few high-level functions are much more manageable than the long and unorganized list of possible functions. From the point of view of theory building, the identifica-

tion of the structure that underlies the role of PMOs in organizations provides a key to understanding the fundamental roles of project management and of PMOs in the creation of value in organizational contexts. This question is at the heart of project management research at the present time. From the point of view of managers and practitioners, identifying the underlying structure greatly simplifies the task of analyzing and understanding existing PMOs and the task of designing or restructuring PMOs.

Legitimacy and Performance of PMOs
The data on the age of PMOs showed that PMOs are being shut down or radically restructured almost as fast as they are being created. At the end of the survey instrument, after having described their PMO, respondents were asked, "Has the relevance or even the existence of the PMO been seriously questioned in recent years?" Forty-two percent of the respondents answered "yes." This data is illustrated in Figure 6. The reality of PMOs in organizations is even darker than this result indicates. A survey of this type has a positive bias, particularly on evaluative questions such as this. People who are interested enough to respond to the invitation to participate in the survey tend to have a positive attitude on the topic of the survey. Those unfavorable and strongly opposed tend not to respond. In this survey, there is an additional positive bias created by the fact that organizations that have shut down their PMO or have decided not to implement one have not responded to this questionnaire in which respondents are asked to describe an existing PMO. The extent of the bias is difficult to estimate, but it is not unreasonable to think that about half of organizations are critical enough of PMOs to decide not to implement one or to seriously consider shutting theirs down if they already have one.

This result clearly identifies a lack of consensus in the project management community. About half of PMOs are seen as legitimate within their organizational context. This level of strong support for PMOs

combined with the large number of PMOs currently in existence underscores the importance of PMOs in project management practice today. On the other hand, the very existence of the other half of PMOs is being questioned. Other questions in the survey confirmed that the issues of value for money and the contribution or lack of contribution to project and program performance are key to the perceived performance and ultimately to the legitimacy of the PMO. Poor-performing PMOs are seen as too costly and as contributing little to project and program performance, while highly valued PMOs are seen as making significant contributions to performance. The ability to show contribution to performance at a reasonable cost is critical.

The survey results show that PMOs are more legitimate in organizations with higher levels of organizational project management maturity. The existence of a correlation between these two variables, organizational maturity and PMO legitimacy, does not reveal the nature of the relationship between the two variables. It may well be that the PMO is highly considered in an organization that is mature in project management because project management is valued in this organization. On the other hand, it may be that a high-performing PMO has raised the level of project management maturity in the organization. The relation is likely to be circular and self-reinforcing, with the high-performing PMO contributing to the level of project management maturity and to the organizational context in which project management and the PMO are valued. The survey also showed that an organizational culture that is supportive of the implementation of the PMO is associated with the legitimacy of the PMO. This is indicative of this circular relationship.

Conclusion
The literature promoting PMOs presents them as a best practice with obvious positive effects on project, program, and organizational perform-

ance. The reality is quite different. Many PMOs are struggling to show value for money and some are failing, causing a very high mortality rate among PMOs. Practitioners and organizations would be well advised not to implement a PMO under naive assumptions of value for money or because PMOs are popular.

The results of the survey have shown the hypothesis that "the structures, roles, and legitimacy of PMOs vary significantly from one organization to the next" to be true. The organizational reality surrounding PMOs is complex and varied. Organizations establish a great variety of different PMOs to deal with their reality. Organizations may decide to include some or all of their project managers within the PMO or they may place them elsewhere in their structures. The PMO's mandate may cover all the organization's projects or only a select few. Organizations choose from among a number of possible roles or functions when deciding upon the mandate to give to a PMO. They also choose between a PMO in a support role with little or no authority and a PMO with considerable decision-making power. These organizational design choices create PMOs of varied form and function.

Many different properties can be used to differentiate "types" of PMOs. The results presented here show that PMOs do in fact vary considerably one from another and that the variation is not limited to a small group of properties or characteristics. The population of PMOs shows considerable variation of not just a few, but of many characteristics, thus creating a myriad of possible forms that PMOs can and do take on. This creates a population that is difficult to reduce to a small number of models.

The Ongoing Program of Research
The survey that forms the basis of this paper is the first phase of a three-year research program to investigate PMOs and the dynamics through which they contribute to organizational performance. In collaboration with their colleague, Dr. Denis Thuillier, the authors

responded to PMI's 2005 annual RFP for research proposals and were awarded a research grant, titled "Modeling Organizational Project Management and PMO Performance."

The second phase of this research program involves four in-depth case studies of PMOs in their organizational context. These commenced in late 2005, and was completed in 2006. The objective of the case studies is to uncover the organizational dynamics that lead to value creation through the use of project management. The PMO is seen as the point of entry into the organization to study the dynamics of value creation in context. The case studies draw upon the results of the survey to establish a rich and reliable representation of the reality of PMOs prior to the detailed investigations. The analysis of the case studies is intended to produce a model of value creation.

The third phase of the research program will involve the validation of the findings from the in-depth case studies using a survey of a larger sample of organizations and PMOs. This will be carried out in 2007. The objective is to produce a conceptually rich and empirically grounded model.

References
Aubry, M., Hobbs, B., & Thuillier, D. (in press). A new framework for understanding organisational project management through PMO. *International Journal of Project Management.*

Callon, M., & Law, J. (1989). *La proto-histoire d'un laboratoire ou le difficile mariage de la science et de l'économie.* Paris: Presses Universitaires de France.

Cameron, K. S., & Quinn, R. E. (1999). *Diagnosing and changing organizational culture: Based on the competing values framework.* Reading, MA: Addison-Wesley.

Crawford, K. J. (2002). *The strategic project office.* New York: Marcel Dekker.

Dai, C. X. Y., & Wells, W. G. (2004). An exploration of project management office features and their relationship to project performance. *International Journal of Project Management, 22*(7), 523–532.

Dinsmore, P. C. (1999). *Winning in business with enterprise project management.* New York: AMACOM.

Englund, R. L., Graham, R. J., & Dinsmore, P. C. (2003). *Creating the project office: A manager's guide to leading organizational change.* San Francisco: Jossey-Bass.

Garfein, S. J. (2005). *Strategic portfolio management: A smart, realistic and relatively fast way to gain sustainable competitive advantage.* Paper presented at the PMI Global Congress North America, Toronto, Canada.

Hagström, P. S. Ö., & Hedlund, G. (1999). A three-dimensional model of changing internal structure in the firm. In A. D. Chandler, Jr., P. S. Ö. Hagström, & O. Solvell (Eds.), *The dynamic firm: The role of technology, strategy, organization, and regions* (pp. 166–191). New York: Oxford University Press.

Hobbs, B. (in press). *The multiproject PMO: A global analysis of the current state of practice.* White paper. Newtown Square, PA: Project Management Institute.

Hughes, P. T. (1987). The evolution of large technological systems. In W. E. Bijker, T. P. Hughes, & T. J. Pinch (Eds.), *The social construction of technological systems: New directions in the sociology and history of technology* (pp. 51–81). Cambridge: MIT Press.

Interthink Consulting. (2002). State of the PMO 2002. Retrieved February 1, 2004, from http://www.interthink.ca/research/home.html

Kendall, G. I., & Rollins, S. C. (2003). *Advanced project portfolio management and the PMO: Multiplying ROI at warp speed.* Boca Raton, FL: J. Ross Publishing.

Light, M. (1999). *The enterprise project office: Beyond 2000, strategic analysis report.* Stamford, CT: Gartner Group.

Morin, E. M., Savoie, A., & Beaudin, G. (1994). *L'efficacité de l'organisation: Théories, représentations et mesures.* Montréal, Québec: Gaëtan Morin éditeur.

Pettigrew, A. M. (2003). Innovative forms of organizing: Progress, performance and process. In A. M. Pettigrew, R. Whittington, L. Melin, C. Sanchez-Runde, F. A. J. Van

den Bosch, W. Ruigrok, & T. Numagami (Eds.), *Innovative forms of organizing* (pp. 331–351). London, UK: SAGE Publications.

Project Management Institute. (2003). *Organizational project management maturity model: OPM3 knowledge foundation*. Newtown Square, PA: Project Management Institute.

Project Management Institute. (2004). *A guide to the project management body of knowledge* (3rd ed.). Newtown Square, PA: PMI.

Project Management Institute. (2006a). *The standard for program management.* Newtown Square, PA: PMI.

Project Management Institute. (2006b). *The standard for portfolio management.* Newtown Square, PA: PMI.

Van de Ven, A. H. (in press). *Engaged scholarship: Creating knowledge for science and practice.* Oxford: Oxford University Press.

Van de Ven, A. H., & Garud, R. (1994). The coevolution of technical and institutional events in the development of an innovation. In J. A. C. Baum & J. V. Singh (Eds.), *Evolutionary dynamics of organizations* (pp. 425–443). New-York: Oxford University Press.

Williams, T. (2005). Assessing and moving on from the dominant project management discourse in the light of project overruns. *IEEE Transactions on Engineering Management, 52*(4), 497–508.

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