01-053

PMO governance framework – dynamic approach

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In the global business arena, organizations seek to develop mechanisms that allow them to succeed and achieve higher levels of performance. The competition is high, and the difference between success and failure is very tenuous. Thus, it is wise to develop a flexible strategy, where it is possible to monitor the market conditions, as well as to adopt some governance approaches towards increasing the organizational overall performance.

Though, it is our opinion and of some authors, that the Project Management Offices (PMOs) are in the best position to identify the learning opportunities as well as to manage the organizational knowledge. Furthermore, the PMOs can be seen as "knowledge networks," which produce, synthesize, and distribute ideas. They incorporate best practices, tools, concepts, and techniques from previous project experience and make them available to the current project teams.

The capital question is how to proper determined, manage and balance the right mix of the organizational projects and the PMOs' governance approach in a dynamic way.

Keywords: PMOs; Organizational Alignment; PM Cultural Alignment; Organizational Learning and Knowledge;

Marco de gobernanza del PMO - Enfoque dinámico

En el ámbito de los negocios mundiales, las organizaciones buscan desarrollar mecanismos que les permitan tener éxito y lograr mayores niveles de desempeño. La competencia es alta, y la diferencia entre el éxito y el fracaso es muy tenue. Por lo tanto, es aconsejable desarrollar una estrategia flexible, donde sea posible monitorear las condiciones del mercado, así como adoptar algunos enfoques de gobernabilidad para aumentar el desempeño general de la organización.

Sin embargo, es nuestra opinión y de algunos autores, que las oficinas de gestión de proyectos (PMO) están en la mejor posición para identificar las oportunidades de aprendizaje, así como para gestionar el conocimiento de la organización. Además, los PMO pueden ser vistos como "redes de conocimiento", que producen, sintetizan y distribuyen ideas. Incorporan las mejores prácticas, herramientas, conceptos y técnicas de la experiencia previa del proyecto y los ponen a disposición de los equipos de proyectos actuales.

La cuestión del capital es cómo determinar, gestionar y equilibrar correctamente la combinación correcta de los proyectos organizativos y el enfoque de gobernanza de los PMO de una manera dinámica.

Palabras clave: PMOs; Alineación Organizacional; PM Alineamiento Cultural; Aprendizaje y conocimiento organizacional;

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1. Introduction

Nowadays, organizations face an extremely competitive global business scenario, where competitors are all over the place, and the market oscillations and variations are constant, which diminishes substantially the possibilities of flourishing the organization performance and growth. In this environmental context, the increasing competition among 'players' favors the orientation towards innovation, as a mechanism of differentiation, as well as places a sharp emphasis on time to market (Hobbs, Aubry, & Thuillier, 2008). Therefore, organizations are dealing each time with more and more projects in their daily routines. According to Maylor et al. (p.663, 2006), "Nowadays, it is hard to imagine an organization that is not engaged in some kind of project activity. Over the past decade, organizations have been turning from operations to project management as part of their competitive advantage strategy".

Projects can be defined as temporary organizations, with a predefined death, conveniently designed to provide benefits to a group of stakeholders related to a permanent organization, which intend to solve complex problems through the use of project management to attain the desire objectives (Söderlund, 2011; Pemsel & Wiewiora, 2013). Nevertheless, managing a multiple set of projects, simultaneously, is an extremely complex and demanding management task that, today, organizations are required to master in order to maximize the value creation through its strategic intents (Dietrich & Lehtonen, 2005; Unger, Gemünden, & Aubry, 2012).

The path that should be followed towards enhancing the project management competencies within the organization is extremely demanding and dynamic, which conditions the possibility to obtain the desired results at all circumstances. Still, there is not a 'disinvestment' in project management. Furthermore, it is demonstrated that organizations evolved using projects as tactical/operational tools towards a strategic vehicle conceived with clear purposes and as a way to potentiate and differentiate the organization (Biesenthal & Wilden, 2014).

However, it is also important to be aware of 'the other side of the coin', which is the problematic nature of project management. Due to the stochastic nature of projects, the scarcity of resources, among other aspects, a great number of projects exceeds their budget, suffer from delays and fail in attaining their goals. It is evident that, somehow, the development of techniques and their applications are far from converging, and the organizations face numerous problems with this hiatus. Despite that, the management of multiple projects including program and portfolio management is a common reality for strategical purposes, in a vast number of organizations with the aim of transforming business through continuous improvement, innovation and value creation (Winter et al., 2006).

According to Teece, Pisano & Shuen (1997) only with a certain maturity stage, an organization can capitalize their assets, and as such, understand, develop, and sustain its organizational strategies to attain a clear competitive advantage and continuous improvement and growth.

In line with these arguments, over the last few decades, an 'entity' emerged in between organizations whenever projects were numerous enough to justify specific coordination and support mechanisms, named as Project Management Offices (PMOs), and separated from the normal operations activities (Loch and Kavadias, 2011; Aubry, Richer, & Lavoie-Tremblay, 2014). The PMOs have become, somehow, an answer for managing projects, programs and portfolios. Nevertheless, some studies (Hobbs, 2007; Hobbs & Aubry, 2007; Hobs & Aubry, in press; Interthink, 2002) showed that the governability of this structure is questionable, especially because PMOs are most often temporary structures, with a limited number of resources and extremely conditioned in their level of autonomy and decision.

These aspects will, without a shadow of doubt, impact the success of projects, programs and portfolios and consequently the organizations' own success.

It is our ambition and intention to study the key determinants involving the dynamic nature of PMO, in order to properly address the desired mechanisms to enhance its success. The paper is organized as follows: 2. Literature review about the main themes; 3. Methodology adopted; 4. PMOs Portuguese context; 5. PMO Governance Framework Proposed; 6. Conclusions, limitations and further developments.

2. Literature Review

2.1 Project Management Office (PMO)

A project management office (PMO) is considered a management structure with a firm intention of standardizing the practices of project management within the organization as well as to properly govern the project related processes, methodologies, tools and techniques (Parchami Jalal & Matin Koosha, 2015). A well-known definition of a PMO, provided by Project Management Institute (p.443, 2008), and which is largely accepted is the following: "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".

There are several types of PMO structures in organizations, each structure varies in the level and degree of control, plus the influence they have on projects within the organization. These structures can be designated as being: Supportive, Controller and Coordinative/Directive (Unger, Gemünden, & Aubry, 2012). A Supportive PMO provides, especially, a consultative role to projects by supplying best practices, training, access to information and lessons learned from other projects. The degree of control and influence provided by this type of PMO is low. A Controlling PMO requires the adoption of project management frameworks or methodologies, using specific templates, forms and tools. PMO visibility and influence is considerably higher. The Directive PMOs takes control of the projects by directly managing them. The degree of control provided by this type of PMO, normally, is the highest. (PMI, 2013).

The common functions or attributes of a PMO, according to (Aubry, Müller, Hobbs, & Blomquist, 2010) are based on the following aspects and dimensions: 1) monitoring and control of project performance; 2) developing and implementing standards and competencies; 3) Project Portfolio management (Multi-Project); 4) Strategic Management; 5) Organizational learning; 6) Managing interfaces with clients, and 7) the recruitment, selection and evaluation of project managers.

The role and influence of a PMO in governing organizational projects varies immensely (Hobbs et al., 2008). The top management openness for selection of the most suitable structure, created for enhancing the projects performance, as well as for attaining the strategic goals is defined as critical and can be put it in multiple scenarios.

Either being an alone structure in the organization or as multiple cooperative structures, entitled with different project governance tasks, scope of activities and with different levels of authority (Müller, Glückler, & Aubry, 2013; Tsaturyan & Müller, 2015). The Project Management Offices (PMO) has been implemented as part of the organizational orientation towards project management, in order to give them a variety of operational functions and strategic (Dai & Wells, 2004).

However, the PMO will be in the best position to identify learning opportunities and to manage organizational knowledge (Kerzner, 2004). Additionally, the PMO can be seen as

"knowledge networking" that produce, compile and distribute know-how. PMOs incorporate the best practices of the organization, tools, concepts and techniques from the experience gained in previous projects and make them available to current teams (Walker & Cristenson, 2005; Aubry, Hobbs, & Thuillier, 2007)

2.2 Knowledge Governance

Knowledge and learning processes are vital for increasing organizational survival rates and for improving business performance in dynamic contexts (Connell, Klein, Loebbecke, & Powell, 2001; Carayannis & Alexander, 2002; Cooper, Lyneis, & Bryant, 2002). In order to improve the understanding of how knowledge is used strategically, a new research area of knowledge governance (KG) has entered the research field. The concept of (KG) is closely related to knowledge management (KM) and organizational learning (OL). Despite that, these concepts and disciplines overlap in some aspects, mainly in relation to their common focus on achieving knowledge processes and learning outcomes, their scopes differ (Pemsel, Wiewiora, Müller, Aubry, & Brown, 2014).

As pointed by Pemsel, Wiewiora, Müller, Aubry, & Brown (p.1413, 2014): "KG distinguishes from KM and OL mostly by its strategic focus of coordinating knowledge processes through the use of overarching governance mechanisms. While KM focuses on the management of knowledge to enable its identification, sharing, application, and creation within the organization, KG goes a step further and focuses on the interrelation between micro- and macro-levels of the organization in order to identify suitable governance mechanisms that move the organization towards desired knowledge-based goals".

Both organizational levels (micro and macro) are dramatic important for deploying a suitable governance strategy for each moment. While the organizational macro-level deals with control, integration, leadership style, organizational culture, the micro-level focus on the individual and teams (attitudes, values, interests, expectations, etc.) mainly by setting the proper conditions for action. KG mechanisms can be used in many different ways and combinations. They can be established to be formal mechanisms, comprising goal setting, planning, directives, rules and regulations (Grandori, 2001). Or, even, informal mechanisms including dimensions like trust, organizational cultures, communication management and leadership style (Michailova & Foss, 2009). Furthermore, they might include aspects like projects and organizational structures, training and development programs, compensation systems, socialization techniques (Husted et al., 2012).

The KG combined in a strategic way with the proper organizational governance structures configuration can be used as an important response to a dynamic environment experienced by organizations in order to be able to enhance the results and maximize the benefits and performance.

3. Methodology

The capital question addressed in this research was how to proper determine, manage and balance the right mix of the organizational projects and the PMOs' governance approach in a dynamic way. The research undertook is divided, basically, into two different phases. The first one, centered on the literature review regarding the theme and the topics involved. In the second phase, 23 interviews were performed with Programs, Projects and PMOs Managers from Portuguese companies with more than 250 employees, especially from sectors like construction, information and technology and public sector, where the formal existence of the PMO is established, and where this structure is seen as the "owner" or as the internal and external "focal point" for the organizational programs and projects. The majority of the Project Managers interviewed did not have any PMI or IPMA's professional certification.

4. PMO in Practice - The Portuguese Experience

More than being just a static organizational unit, the PMO's dimension is defined having in mind the planned number of managers, initiatives, projects and programs. Despite that, changes are continuously occurring, internally and externally, so the PMO becomes in this way a dynamic structure. At this level, the existence of a PMO is, especially, relevant to monitor the performance of projects and programs, allowing greater visibility and investments control for the top management and contributing, somehow, to enhancing the organizational value.

4.1 Organizational Model

Looking to organizational structures we found PMOs centrally located even if some projects or programs are located abroad. So, one question needs to be answered first. Is the PMO governance approach for managing projects and programs well adjusted?

The governance is a subset of activities that are involved in the total corporate governance. This conclusion presumes the perspective of a corporate board. It offers a certain project control structure and needs information in order to align and keep the investments portfolio aligned with the strategic organization objectives. In our view, that is the reason why project governance may include a structure, roles and responsibilities in order to be able to take decisions. That is also the reason why a PMO is so important. The PMO must help to successfully realize projects. The PMO must provide project guidelines and is the central source of information and should co-monitor the quality of project management.

Some of the organizations interviewed have introduced this model in late 90' and they have suppressed this function after 4/5 years of operation, recovering it again after 10/15 years. This is also related to their own life cycle, as well as to the economy recession situation which created a huge slowdown or, even, a stop in investments and, consequently, in projects and programs. Even if we can say that PMOs establishment is relatively recent in Portuguese organizations, it was observed that these organizational structures become different every three years giving these units the stamina for a constant adaptation to change – once again, other important point requiring a dynamic approach. Basically, the format depends on the existence of a unit responsible for a team that responds to predetermined needs posed by the Project Management and to Project Managers with a concrete view to provide excellence services. Nevertheless, it is important to understand the following three dimensions: PMO Tasks, PMO People and PMO Organization, which could be the trigger for a successful combination.

4.2 Process Model (Functions and Services)

During the interviews phase, it was found that common tasks and processes were aligned with programs and projects objectives and life cycle. Basically, PMOs can be split PMOs into Planning and Execution Services. On the planning side, we have functions committed to the PMO like: Communication Management, Stakeholder Management, Planning; Resource Management, Benefit Management and Performance Monitoring. On the other hand, the Execution Services dimensions we have the: Monitoring & Review, Reporting, Risk Management, Issue management, Change Management, Project Finance, Procurement and Commercial, Quality Assurance, Information and Configuration Management, Transition Management.

However, Portuguese PMOs are acting like real Centre of Excellence (CoE) and for that reason the majority of our sample assumes the responsibility to setting up standards and methods, as well as, to apply processes and tools. In other way, CoE as part of PMO functions identify competencies and needs for knowledge, observing the projects side and

taking actions if necessary, by bringing, sharing and taking lessons from other past experiences (projects and programs).

4.3 PMO dimension

The permanent organization will always define the dimension. It will depend from the complexity and duration of the program or projects the PMOs engagement. PMOs in Portuguese companies have 4 to 7 full time employees balancing seniors and junior members in the unit. Usually the ratio is 1 senior to 2 junior employees. The idea is to allocate senior members as team coachers. Once PM service or PM process is implemented the senior hand this over to a junior member with a reduction in terms of cost to the program or project.

In other way, it was interesting to see that in our sample some PMOs with Project Managers and PMOs without Project Managers. When we found Project Managers inside the PMO, the structure had the responsibility for managing all the organization's projects. In this case, PMO's activity was dominated by actions required to manage all the projects and project managers. This situation has also a co-relation with the economic rationality of organization. For top management this staff could be an overhead, and companies are reluctant to create more expenses.

4.4 PMO and the authority level

Across our research, other important question has been discussed. How to define the PMOs authority level? It is clear for us that this is a question of top management delegation. What we have confirmed was that top management has understood the PMO value and has decided a set of PMO responsibilities. For that, a clear project charter was fixed and approved by the PMO Sponsor. This responsibility, once again, cover questions regarding project and program governance as well the link between the business (functional areas) and projects or programs. Financial responsibility was also linked with the functional finance area, specifically about commitments and budget allocation.

In terms of resource management, the PMO authority had to interact with all organization. It is a question of guidance – PMO must act like a guard-keeper. First PMO must be involved in project management selection. Second PMO must work with company resources (owned by line managers) and should redirect resources to additional projects, to PM training or even to follow-on work. We are convicted that PMO influence inside the organization is the secret for balancing the required level of authority and this is, somehow, related with PMO budget autonomy. We cannot forget that a PMO is not a casual expense but must be treated as an organizational operation and this operation must pursuit excellence results, as well as being able to contribute noticeably to the organizational performance.

5. PMO Governance Framework

According to Klakegg (2010), in the governance of projects "a project is not an objective in itself but a means of achieving strategic change or future benefits. The question is no longer whether a project is well executed or managed, but whether it is possible to create long term value for the owner and financing party. This points more towards choosing the right investment opportunities and defining the best possible fundamental design for the project" (p. 27) (Müller, Pemsel, & Shao, 2014). Despite of its importance, project governance continuous to present innumerous problems and challenges, namely regarding the misalignment between corporate and project governance (Aubry, Hobbs, & Thuillier, 2006), clear and defined ways towards managing knowledge, supporting the organizational learning and reducing the political tensions (Aramo-Immonen & Vanharata, 2009; Wiliams & Samset, 2010; Müller, Pemsel, & Shao, 2014).

Projects are frequently cross-functional and have internal and external operations which, often results in several managerial and governance complexities for the Project Based Organizations (PBOs) (Bredin & Söderlund, 2011; Davies, Gann, & Douglas, 2009). The PBOs nature and characteristics could create a proper ecosystem to develop a KG environment. Nevertheless, without the proper governance approach and structure the KG will commonly be temporary and fragmented configurations, with difficulties in retaining the organizational knowledge in the long term (Grabher, 2004), as well as with limitations on the learning processes. The development of a flexible KG strategy without neglecting the dynamic nature of the organization, will improve the efficiency and effectiveness of the KM and OL initiatives as well as the projects, programs and portfolio overall performance. These initiatives need to be carefully analyzed in order to find appropriate KG mechanisms, and therefore match the relations between macro- and micro-levels without taking into account the specific characteristics and idiosyncrasies of the PBO.

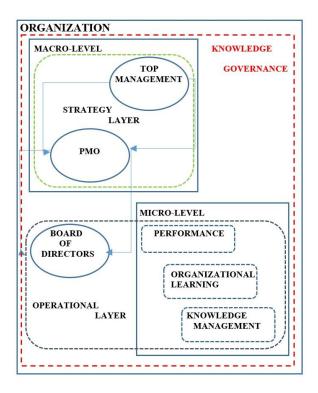


Figure 1 - PMO Governance Framework

Figure 1, discloses the framework developed towards defining a dynamic approach towards the PMO governance. The PMO needs to present a well establish relation between top management and the board of directors. This purpose intends to mediate, on one hand, the strategic layer where the top management is placed, seeking to be aligned with them, obtaining the highest degree of autonomy possible and introducing synchronous decision processes based on the definition of the proper KG mechanisms and strategy.

On the other hand, by being deeply involved in the day-by-day of the projects, programs and portfolios, the PMO will enhance the learning opportunities, trying to figure out the most suitable management approaches based on the processes, techniques, tools and competencies that each situation requires to fully increase the performance of all projects.

This type of approach promotes the organizational learning, as well as the organizational balance, allowing the results improvement by:

- 1) The incorporation of such processes and knowledge in the daily organizational routines;
- 2) Reduction of the time response to other future situations; and noteworthy
- 3) The results obtained that provide better organizational dynamics.

6. Conclusions, limitations and further developments

As mentioned by different authors, the absence or impracticability of the efficient solutions presented for promoting the organizational knowledge and learning, enables the following scenarios, namely:

- 1) The predisposition for occurring the same problems and failures (Pinto, 1999);
- 2) Decreased ability for assessing and deciding (Bolloju, Khalifa, & Turban, 2002);
- 3) Less ability to manage the organizational resources in processes as crucial as planning, interacting with markets and its players, logistics and operations, etc.;
- 4) Decrease of organizational results, and consequent delay in the process of differentiation from competitors; and
- 5) Poor Organizational Maturity (Kezner, 2000; Schlichter, 2001).

Therefore, it is our belief that the proposed PMO Governance Framework is an appropriate contribution towards responding to the problems mentioned and as a facilitator to increasing top management awareness to the importance of this theme, as well as to trigger the knowledge acquisition and learning by the different project members in the organization. The human resources, through their past experiences, technical experience and continuous interaction can definitely contribute to the development of the organizational performance and sustainability.

Furthermore, some of the main findings point out to the relevance of adopting governance policies towards enhancing the development of dynamic capabilities through proper KG mechanisms, as well as to guarantee the strategy alignment between organizational governance and PMO governance. These combined actions, will increase the project management maturity within the organization, based on the proper governance style towards the enhancement of the organizational learning and knowledge. These aspects are supported, somehow, by the literature revised and by the interviews conducted to the PMO members of Portuguese organizations. Still, other relevant aspects collected during the research point to the following:

- 1) the variability of PMOs and to the uncertainty of its roles and responsibilities;
- 2) the organizational governance model limits the PMO governance and its success rate; and
- 3) the power and influence level of PMO versus the Top Management sponsorship and governance style.

The main limitations of this research study are, mainly, related to: a) the opinions gathered are exclusively from Portuguese organizations among its members of PMOs; b) Despite of having been interviewed more than 40 project or program managers, the sample dimension is not enough to further generalizations; c) The framework proposed was not yet been tested in case studies. As further developments, the research will cover a larger sample with a global survey. With the data collected form this survey we are convinced that it will be

possible to uncover co-relations between the levels of maturity of the PMO, the core competencies of the project managers and its level of performance attained.

The proper combination of all the determinants it will be possible to establish which competencies are needed towards enhancing the projects performance as well as the PMO maturity.

References

- Aramo-Immonen, H., & Vanharanta, H. (2009). Project management: The task of holistic systems thinking. Human Factors and Ergonomics in Manufacturing & Service Industries, 19(6), 582–600.
- Aubry, M., Hobbs, B., & Thuillier, D. (2006). Project Management Office: A Framework to Understand Organizational Project Management. Newtown Square, Pennsylvania USA: PMI.
- Aubry, M., Hobbs, B., & Thuillier, D. (2007). A new framework for understanding organisational project management through the PMO. International Journal of Project Management, 25(4), 328–336.
- Aubry, M., Müller, R., Hobbs, B., & Blomquist, T. (2010). Project management offices in transition. International Journal of Project Management, 28(8), 766–778.
- Aubry, M., Richer, M.-C., & Lavoie-Tremblay, M. (2014). Governance performance in complex environment: The case of a major transformation in a university hospital. International Journal of Project Management, 32(8), 1333–1345.
- Biesenthal, C., & Wilden, R. (2014). Multi-level project governance: Trends and opportunities. International Journal of Project Management, 32(8), 1291–1308.
- Bolloju, N., Khalifa, M., & Turban, E. (2002). Integrating knowledge management into enterprise environments for the next generation decision support. Decision Support Systems, 33(2), 163–176.
- Bredin, K., & Söderlund, J. (2011). Human Resource Management in Project-Based Organizations— The HR Quadriad Framework. Hampshire: Palgrave Macmillan.
- Carayannis, E. G., & Alexander, J. (2002). Is technological learning a firm core competence, when, how and why? A longitudinal, multi-industry study of firm technological learning and market performance. Technovation, 22(10), 625–643.
- Connell, C., Klein, J. H., Loebbecke, C., & Powell, P. (2001). Towards a knowledge management consultation system. Knowledge and Process Management, 8(1), 48–54.
- Cooper, K. G., Lyneis, J. M., & Bryant, B. J. (2002). Learning to learn, from past to future. International Journal of Project Management, 20(3), 213–219.
- Dai, C. X., & 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.
- Davies, A., Gann, D., & Douglas, T. (2009). Innovation in Megaprojects: Systems Integration at London Heathrow Terminal 5. California Management Review, 51(2), 101–125.
- Grabher, G. (2004). Temporary Architectures of Learning: Knowledge Governance in Project Ecologies. Organization Studies, 25(9), 1491–1514.
- Grandori, A. (2001). Neither Hierarchy nor Identity: Knowledge-Governance Mechanisms and the Theory of the Firm. Journal of Management and Governance, 5(3-4), 381–399.
- Hobbs, B., Aubry, M., & Thuillier, D. (2008). The project management office as an organisational innovation. International Journal of Project Management, 26(5), 547–555.
- Kenneth Husted, Snejina Michailova, Dana B. Minbaeva, & Torben Pedersen. (2012). Knowledge-sharing hostility and governance mechanisms: an empirical test. Journal of Knowledge Management, 16(5), 754–773.
- Kerzner, H. (2000). Applied Project Management: Best Practices on Implementation. New York: Wiley.

- Kerzner, H. (2004). Advanced Project Management: Best Practices on Implementation. New Jersey: John Wiley & Sons.
- Klakegg, O. G. (2010). Governance of Major Public Investment Projects: In Pursuit of Relevance and Sustainability. NTNU, Trondheim, Norway.
- Maylor, H., Brady, T., Cooke-Davies, T., & Hodgson, D. (2006). From projectification to programmification. International Journal of Project Management, 24(8), 663–674.
- Müller, R., Glückler, J., & Aubry, M. (2013). A Relational Typology of Project Management Offices. Project Management Journal, 44(1), 59–76.
- Müller, R., Pemsel, S., & Shao, J. (2014). Organizational enablers for governance and governmentality of projects: A literature review. International Journal of Project Management, 32(8), 1309–1320.
- Parchami Jalal, M., & Matin Koosha, S. (2015). Identifying organizational variables affecting project management office characteristics and analyzing their correlations in the Iranian project-oriented organizations of the construction industry. International Journal of Project Management, 33(2), 458–466.
- Pemsel, S., & Wiewiora, A. (2013). Project management office a knowledge broker in project-based organisations. International Journal of Project Management, 31(1), 31–42.
- Pemsel, S., Wiewiora, A., Müller, R., Aubry, M., & Brown, K. (2014). A conceptualization of knowledge governance in project-based organizations. International Journal of Project Management, 32(8), 1411–1422.
- Pinto, J. K. (1999). Managing information systems projects: regaining control of a runaway train. In Managing business by projects (Artto KA, Kahkonen K, Koshkinen K, editors., pp. 30–43). Helsinki: Project Management Association Finland and NORDNET.
- PMI. (2008). A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (4th ed.). Newtown Square, Pennsylvania USA: PMI.
- PMI. (2013). A Guide to the Project Management Body of Knowledge (PMBOK® Guide) (5th ed.). Newtown Square, Pennsylvania USA: PMI.
- Schlichter, J. (2001). PMI's organizational Project Management Maturity Model: emerging standards. In Proceedings of PMI Annual Symposium. Nashville, Upper Darby (PA): PMI.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. Strategic Management Journal, 18(7), 509–533.
- Tsaturyan, T., & Müller, R. (2015). Integration and governance of multiple project management offices (PMOs) at large organizations. International Journal of Project Management, 33(5), 1098–1110.
- Unger, B. N., Gemünden, H. G., & Aubry, M. (2012). The three roles of a project portfolio management office: Their impact on portfolio management execution and success. International Journal of Project Management, 30(5), 608–620.
- Walker, D. H. T., & Christenson, D. (2005). Knowledge wisdom and networks: a project management centre of excellence example. The Learning Organization, 12(3), 275–291.
- Williams, T., & Samset, K. (2010). Issues in front-end decision making on projects. Project Management Journal, 41(2), 38–49.
- Winter, M., Smith, C., Morris, P., & Cicmil, S. (2006). Directions for future research in project management: The main findings of a UK government-funded research network. International Journal of Project Management, 24(8), 638–649.