

IMPLEMENTING PROJECT PORTFOLIO MANAGEMENT IN A COMMERCIAL BANK

István CSENDES

Corvinus University of Budapest
Fővám tér 8. 1093 Budapest, Hungary
istvan.csendes@uni-corvinus.hu

Abstract. *This paper aims to contribute to the general knowledge of Project Portfolio Management (PPM) by presenting a case study on the implementation of Project Portfolio Management in a Hungarian Commercial Bank. In the first part of the study, I briefly discuss the concept of PPM; then based on international surveys, I write about experiences gained in its operation. In the second part of the study, I describe the most important findings of an exploratory case-study based research regarding the practical implementation of the method in a Hungarian Bank. This case-study also builds on the results of previous surveys. According to these two main concepts are highlighted: the organizational implementation of the PPM and the PPM development in practice. The most important conclusions are the following: In the examined case it is the introduction of a reporting-operating Project Portfolio Management Office (PPMO). The general conclusion is every PPMO has to be tailored to the needs of the organization. In this process, the role of top management should be considered which has two dimensions. 1) The ideation process is top-down or bottom-up 2) the top management is part of the operative implementation of the ideas or it has only a supervisor role.*

Keywords: *project portfolio management; strategic management; project management; commercial bank; case study.*

Introduction

Project Portfolio Management is crucial in the situation where the organization has to face problems arising from the simultaneous implementation of multiple projects. While thinking of projects is becoming more and more common in many areas, it is also necessary to ask whether the many projects together are an optimal system in the given organization. Does this system adequately support competitiveness, optimum resource utilization, and organization goals? Top managers have already found this dilemma. Thus, Project Portfolio Management is increasingly being used to improve the operational efficiency of business and non-business organizations.

Although this dilemma and its reflecting concept (PPM) are well known and literature on advantages, problems and applications are abundant, in a country (Hungary) wide level, there is lack of deep scientific understanding of these issues. There are very few references for project portfolio management in the listed Hungarian scientific publications (MTMT-www.mtmt.hu). An MTMT search for the English words “project portfolio management” in the title of a study produced only 2 authors and only 4 hits: Ligetvári (2013, 2014) and Csendes (2017a, 2018).

As in Hungary, neither the topic nation-state research nor the industry-wide research has quasi no precedent, so the indirect purpose of this paper is to report on the

beginning of such a professional work. To do so, in the first part of the study, I shortly interpret the concept of PPM; then based on international surveys, I wrote about experiences gained in its operation. Then, in the second part of the study, I describe the most important findings of a case study concerning the implementation of project portfolio management in a Hungarian commercial bank.

The concept of Project Portfolio Management

PPM is naturally linked to project management (PM), but it would be a mistake to interpret it only as a further development and expansion of the latter, since its basic concept covers not only the work planning, organization, and monitoring tasks of the PM, but it is also applicable for the management at the highest level. In fact, we are talking about the task of implementing the strategy. (Rajegopal et al., 2007) Strategic management's basic idea can be easily paired with PPM, because simplistically: organization on the one hand „diagnoses” and, on the other hand, it acts. This duality appears in a variety of ways in classical strategic management literature - e.g. the concepts of strategy formation vs. strategy realization in Mintzberg et al., (1998). It is easy to understand that projects represent the change in the life of an organization, in fact ultimately embody "strategic" action. In addition, in the normative sense, future changes (sometimes in the form of a large number of projects) must be deliberately and effectively managed, in order to achieve organizational goal(s). Project portfolio management offers this option to top management.

PPM focuses on the "high level" value creation issue of strategic management (strategy / advantage / efficiency issues). According to this view, PPM is a tool of operationalizing objectives and goals that is why the functioning of the organization largely depends on it. In addition, if this is the tool of implementing the strategy, it is also an embodiment of elementary interests. It is not only the guarantee of future-oriented enterprise efficiency but also the weapon of achieving benefits (and even financially measurable rewards). It thus plays a central role in the realization of strategic and financial objectives. An investment in projects can naturally be interpreted as a purely financial investment (Zdanyte & Neverauskas, 2011) in many cases. Where the profit-goals are obvious, the measurement of benefits and yields are fundamental. The maximization of rewards is expected in most cases. However, achieving these goals is not a trivial task; it rather poses a serious management challenge. It is no wonder that in the case of corporate PPM solutions considerable attention is paid to the prior portfolio evaluation models or even to the coexistence of different aspects: e.g. strategic, financial, risk (Fekete, 2017), legal, etc. This provides a strong planning, monitoring and financial characteristics of the analyzed strategic-organizational issue.

In this mission, the organization faces many challenges. These challenges derive fundamentally from the nature of the project portfolio, as the portfolio is a collection of unique but competing projects (even programs), which fight for scarce resources. Management requirements of a project portfolio thus are different from the management requirements of individual giant projects (and programs). Here, the primary challenge is that the components of the portfolio (projects) fight for their existence and for the limited resources of the company. (Archer & Ghasemzadeh, 1999; Dye & Pennypacker, 1999; Chao & Kavadias, 2008) Operating in a dynamic environment is another critical challenge for organizations (Petit & Hobbs, 2010), in which the number, composition, and interdependence of the projects are constantly changing.

Thus PPM is not simply a tool for allocating resources; it is more a method of accepting projects in the portfolio, reviewing the progress of individual projects and constantly prioritizing all projects in the portfolio. All these activities are done in the sake of balance, synergies, and success, while the project portfolio appears to be the primary field of the company's strategy (Morris & Jamieson, 2005). PPM can thus be understood as a business process the main task of which is the management of complex processes interacting with each other, helping decision-makers (to evaluate, select, rank, etc.) who, together with other members of the organization, are interested in realizing benefits and getting or giving feedback. (Wideman, 2007)

The central role of PPM in the organizational context is well understood too. For instance, in the so-called top-down approach, it is easy to interpret PPM's important role as a competency to identify and manage the most beneficial projects. Figure 1 shows its central role, especially concerning the top-down approach.



Figure 1. Organizational context of portfolio management (Source: Project Management Institute, *The Standard for Portfolio Management*, 2006, p.7)

These processes are controlled by the Project Portfolio Management Office (PPMO). These offices differ greatly from each other in their tasks and responsibilities. The task of Project Portfolio Management Office (PPMO) is not only to deliver certain projects and programs (as PMO does) but also to optimize investments to achieve the strategic goals of the organization. Moreover, it has a closer relationship with the CEOs and project/program managers. The added values of these offices -compared to the PMOs- are represented by the positive effects of cross-functional synergy. As a result of this, its scope can be much wider and can appear on the whole company level. Based on the contribution to organizational success, we can distinguish several types: there are reporting, strategic, operational, and business process changing PPMOs; they all complement each other to meet the widest range of needs. While the reporting PPMO ensures that the right information is used, decision-makers will be provided with these, the operating PPMO helps to properly implement programs and projects. Strategic PPMO supports the organization in choosing the right programs and projects. The fourth type of PPMO helps in implementing organizational changes. (Rouwendaal et al., 2014) They all have coordinating, controlling, and supporting role but to different extents,

which help to increase resource allocation efficiency, the improvement of transparency, increased the credibility of information, and wider knowledge transfer and communication. (Unger et al., 2012) Beside PPMOs other organizational players have to be mentioned: as internal involved groups have the biggest impacts on the success of PPM - the functional leaders and the project managers. (Beringer et al., 2013) Furthermore, a prominent actor appears both in the practice and in the literature: the project portfolio manager. (Jonas, 2010)

Empirical researches

Today we can already easily find out about PPM experience. For this purpose, we have scientific publications as well as surveys of professional organizations/consultancy firms. These publications deal with many aspects of the portfolio management. For example, Meskendahl discusses the success of the project portfolio in several articles (Meskendahl, 2010; Meskendahl et al., 2011). Just as Müller et al. (2008) who states -on the basis of comprehensive statistical analysis- that successful organizations have organizational level experience in selecting and prioritizing projects aligning with its strategy.

Martinsuo (2013) in her writing analyses the results of new empirical researches on project portfolio management. According to the experience, she has already drawn attention to the limitations of the interpretation of PPM as a rational decision-making process. She highlights that the PPM process in practice, compared to the classical approach, is not a rational decision-making process supporting the company's strategic objectives, but rather a series of interactions between people and organizations. These interactions are highly personal and may affect the structure of the organizations concerned.

In addition to these scientific studies, specific data can be found in the surveys of major consulting firms and professional organizations (e.g. PMI, PriceWaterhouseCoopers-PWC, Gartner, UMT). With regard to the industry's prevalence of the method, from the PWC's 2012 survey, we know that among the organizations using PPM the highest use rates were detected in retail, insurance, automotive, banking and capital market, telecommunication, manufacturing, moreover energy- and defense-industry companies.

PPM solutions were introduced firstly in Hungary, like in abroad, for multinational corporations and large public utilities. Based on the market information, without the completeness, here are some well-known Hungarian examples from early introductions. From the automotive industry: Audi, Mercedes, evopro. From the telecommunications sector: Telekom, Telenor, Vodafone. From state-service-utilities-energetics: MVM, MNB, NAV, EON, MP, Lufthansa, MOL. From the insurers: NN, Generali. From the high tech and software industry: Ericsson, NavNGo. From the primary experience of early Hungarian PPM users, I will write about a corporation from the banking sector. One of the reasons is that, similarly to foreign experience (see in the PwC Survey), we can observe PPM in this sector as a priority area in Hungary. This is a result of the "more advanced" PPM culture in the Hungarian banking sector, which is already available on expert and managerial level; furthermore, some information and experiences are accessible too.

Before discussing the Hungarian case, we can conclude that regarding the international and national situation; the 2008 crisis has hit the banking sector very seriously. In

Hungary, banks also had additional problems that due to state regulation, the sector's players had to bear additional burdens (e.g. accountability and abolition of foreign currency crediting). This is connected to Bruck (2009)'s international experience, that PM culture is still healthy in the sector after the outbreak of the 2008 crisis and despite the problems. At this time, according to project, program and portfolio managers, the main changes and challenges include the development and continuous growth of information technology (IT), the strengthening of globalization and the strengthening competition in the financial sector. IT projects are growing and IT needs of projects are growing too. This general belief -based on also market information- has been continuously proven since the crisis.

Foreign banks' practice of introducing and developing the project, program and portfolio management methodology is best known from expert reports. Publications featured case studies deal with the subject with various focus areas and depths. For example, Nieto (2010)'s publication analyses the example of Fortis bank melting into BNP Paribas, or the work of Hoffmann & Rentrop (2012) also can be mentioned, which describes the development of a bank's project prioritization methodology. Of course, other unique case descriptions could be mentioned, but unfortunately, they are not a real benchmark for Hungarian banks. Due to its special situation, the use of one of the notable Hungarian-related (Central Bank of Hungary) case study (Pap, 2010) is limited for this purpose too - as the operation of a central bank differs significantly from that of a commercial bank.

We can find relevant information for a case study about a Hungarian bank in previous years' researches if we examine it from two main aspects: project organization and bank portfolio. Those empirical studies do not mention PPMO from the organizational perspective; they present only the role of PMOs. On the Hungarian sample outside of the banking industry, Szabó (2018) was studying the maturity of PMOs. There is a similar study (Pansini et al., 2014) on the Italian bank sector. The result of that study is that there is a general need for PMOs in the banking sector.

Hadjinicolaou & Dumrak (2017) was doing a research on well-known topics (PPM and Project success) by other authors (see above: Meskendahl, Müller) in several sectors (bank sector included). This study found a connection between PPM and having project management offices (PMO) to support both project and portfolio implementation. The research results revealed that the benefits of PPM application were not seen outstandingly, the research further examined the barriers to implementing an effective project portfolio management process in Australian organizations.

Yang et al. (2015) are presenting a unique case study in a case of a large Australian bank. They were studying the PPM capabilities of IS projects. They have identifies dynamic capabilities which are the following: 1) IT Resource Integration; 2) IT Resource Configuration; 3) Resource Acquisition and Elimination; 4) Constant Change Culture; 5) Business Objectives Driving Projects; 6) The Multiple and Dynamic Prioritization Criteria; 7) Demand Management; 8) The Customized Tools; 9) Intensity of Organizational Learning; 10) Training and Career Paths; 11) Dynamic Balancing of Risk and Reward; 12) Cancelling and Reconfiguring In-Flight Projects; 13) Sensing the Environment.

The research of Csendes (2018) is the most important in this topic, where I studied the introduction of 6 PPM system in the banking sector. Based on this, support of top management is essential for the introduction of PPM. The appearance of portfolio managers was preceded by the operation of the Project Management Office (PMO). The introduction of this method became necessary because of the increase in the number of IT projects. There was a clear consensus among banks regarding the response to the market challenges facing the domestic banking sector and the nature of the projects launched to exploit the opportunities. Projects, programs and other works can be linked to digitization and legal compliance. Each of the banks analyzed has already had a formalized project management methodology. However, regarding the application of the PPM methodology, it is very diverse in terms of both the PPM structure and the location in the organizational structure. In addition, it has experienced that it is a problematic area of application of the method: the project dependency management, the depth of resource planning, or the acceptance of PPM structure by (non-project) business areas.

Methodology

The case study in the followings shows the introduction of a PPM system in the case of a Hungarian bank. The timeframe of the case study is from the following years of the crisis until today. For this study, a qualitative method was chosen. Qualitative research is defined as an in-depth multifaceted investigation (Orum et al., 1991), providing knowledge from the participant's point of view to gain understanding and meaning of a specific and emerging phenomenon (Merriam, 1998), which also offers a variety of evidence (Miles & Huberman, 1994). I obtained primary data for this research through a series of semi-structured interviews with a project portfolio manager of a bank. These interviews had two topics: The first topic was the organizational solutions of PPM, while the second was the details of the development of practices in management. The project portfolio manager was selected from a previous research (Csendes, 2018). The person was chosen because he was an actor in a very interesting bank case. This case's deeper details are topics for the chapter below.

Case study

In the beginnings (2010-2013) there was only an IT Project office in the bank, under the supervision of Chief Informatics Officer (CIO). The role of the office was to secure the project delivery. In 2012 they created the first portfolio management organizational department – under the supervision of the Strategic Director – which was focusing on classical portfolio management. The two departments merged in 2013 under the Chief Operation Officer (COO) and it was fulfilling the role of both. It was supervised by the Strategic Director; however, the department was called project and portfolio management office. Finally, in 2016 with similar roles and name it became a part of COO's directorate.

During this developmental period (2012-2015) the top management's need and the practices of PPMOs were different. The top management's needs were clear. Defining the projects and operatively seen the deliverables. The most important was the successful deliverable of projects. Besides that, it was an important expectation towards the PPMO to present the risks of the deliverables and the holding's external project needs. In addition, it was highly important to increase the capacity of the department.

Meanwhile, the practice of the portfolio management was like, in every quarter they suggested “rebalancing” decisions, where most of the times the recommendation was to terminate whole projects. Project managers were hardly supported, some kind of “conflict-culture” was created within the organization. That time the focus was on the introduction of a portfolio management supporting tool. The portfolio level resource planning was high (without the IT department); however, there was a lack of “demand management” too. The relationship was damaged between IT and PPMO, the trust was missing from the relationship.

That was the root cause for the PPMO could not meet the expectations of the top management. Besides that, there were serious issues with frustration and fluctuation among portfolio and project managers.

In this environment in 2016, it became a top priority to make a project portfolio management practice which can help to meet the expectations of the top management. Because of this, the professionals at the bank introduced provisions in six fields:

Portfolio planning – the introduction of demand management: Introduction to the project initiation phase. The project office gets to know of the project idea from the beginning and giving proper methodological help for a successful preparation.

Introduction of the portfolio planning calendar: Regular, quarterly executed project portfolio prioritization and rebalancing has been included on the agenda of the decision-making board, enabling the continually changing project portfolio priorities to be continuously matched to business strategy directions.

Portfolio planning – execution of the yearly portfolio plan based on the business and IT strategy: In Q4 based on the updated business and IT strategy the bank’s next 3-year project portfolio was developed in a top-down way. Project dependencies and resource requirements were decided on a high level, and a high-level schedule for the project portfolio was implemented.

Introduction quarterly rolling IT release planning: Detailed project planning made possible to plan (the most important bottlenecks of projects) IT deliverables by using two-month release windows planning, also considering technical dependencies. All of this had happened with the involvement of relevant IT experts and suppliers. This led to proactive manageability on portfolio-level operation risks.

Improved project and portfolio control and reporting: An easy-to-understand and informative project portfolio report which contains the most important results, the portfolio-level risks, and their management approvals. The regular monthly report made it possible for the management to get an aggregated report with the most important details of the projects instead of ~100 pages reports of the single projects.

Implementation of provisions to increase the delivery capabilities of the organization: The project portfolio was divided into sub-portfolios considering both dependencies and project networks. All of the sub-portfolios were supervised by a sub-portfolio manager (called “program leader”). The sub-portfolio manager became responsible for the projects to be done on time on the expected quality, the preparation of the connected projects, and the mentoring and supervising of project managers within the sub-

portfolio. With this governance model, it was possible to implement the project portfolio management tasks, at the right place and make a delivery oriented organization.

Conclusions and limitations

When creating a portfolio management office, it is a fundamental dilemma: what kind of activity is necessary to create a given organizational unit. According to the literature, the goal of portfolio management is to create a portfolio where the strategic needs are prevailing over individual projects. The created portfolio should have the highest business value within the given financial and cost barriers.

In practice, the implementation of the project portfolio is defined by the top management's needs. There are two perspectives which can be identified: 1) the top-management is led by the "helicopter-perspective" the project ideas are generated bottom-up and there is a need for selection. Or the opposite 2) the top-management is conscious in the strategy creation and they make top-down project ideation, where they are part of the implementation.

In this case study, the second version of PPM environment was identified. The published implementation was an answer to these needs. So we can categorize the examined organization unit of the bank as a reporting-operating PPMO (Rouwendaal et al., 2014).

The experiences of creating best practices in management are in line with the results of Yank et al., (2015). It should be highlighted in the Hungarian case, the portfolio management was studied at the whole banking operations (which is dominated by IS projects), while the Australian case study was limited to IS project portfolio. The 13 capabilities identified by Yank are in line with the above case study - only with the 4) Constant Change Culture, 9) Intensity of Organizational Learning, 10) Training and Career Paths were not supported, due to lack of information in the Hungarian case.

From the case study that can be concluded, every PPMO has to be in line with the organization's needs. In the case of the studied bank, it meant that the PPMO has to be in line with the real needs of the top management. This means in this case, it had to support the delivery of projects and controlling of project operations. In this context the goal of portfolio management was to support the top management's decision with 1) high-quality planning 2) generating inputs (resource planning, release, capabilities etc.), which makes it possible to create realistic portfolio schedules. On the other hand, there was a need for a transparent reporting system.

Information provided in the above case study is not representing the experiences of other Hungarian commercial banks. On one hand, there is not enough information which makes it accountable in the case of other banks. In the other hand based on my previous researches (Csendes, 2017b, 2018) it can be concluded, that big Hungarian banks are started to introduce the PPM in different ways, development levels, and organizational solutions. Thus, general scientific consequences for the whole sector cannot be concluded based on this case study. However, the questions mentioned in it (organizational solutions, management practices, and general conclusions) are relevant in the case of any other domestic bank. Most of all, this case study can be interpreted as an interesting benchmark case.

Finally, based on theoretical and practical considerations of the paper, a number of further research topics can be identified. Among these, I would name one: complete conceptual clarification of PMOs and PPMOs. In this context, further research works need to categorize, and explore the denominations and activities of these organizational units.

References

- Acebes, F., Pajares, J., Galán, J.M., & López-Paredes, A. (2014). A new approach for project control under uncertainty. Going back to the basics. *International Journal of Project Management*, 32(3), 423-434.
- Atkinson, R., Crawford, L., & Ward, S. (2006). Fundamental uncertainties in projects and the scope of project management. *International Journal of Project Management*, 24(8), 687-698.
- Barton, M.A. & Sutcliffe, K.M. (2010). Learning When to Stop Momentum. *MIT Sloan Management Review*, 51(3), 69.
- Barton, M.A. & Sutcliffe, K.M. (2017). *Contextual engagement as resilience-in-action: A study of expedition racing*. Paper presented to the 33rd EGOS Colloquium. Copenhagen, Denmark.
- Barton, M.A., Sutcliffe, K.M., Vogus, T. & DeWitt, T. (2015). Performing under uncertainty: Contextualized engagement in wildland firefighting. *Journal of Contingencies and Crisis Management*, 23(2), 74-83.
- Bernstein, E., Bunch, J., Canner, N., & Lee, M. (2016). Beyond the holacracy hype. *Harvard Business Review*, July-August, 38-49.
- Bleicher, K. (1970). Die Entwicklung eines systemorientierten Organisations- und Führungsmodells der Unternehmung [The development of a system-oriented organization and management model of the company]. *Zeitschrift Führung + Organisation*, 39(1), 3-8.
- Borgert, S. (2013). Resilienz im Projektmanagement [Resilience in project management]. Wiesbaden: Springer Gabler.
- Brady, T., Davies, A., & Nightingale, P. (2012). Dealing with uncertainty in complex projects: revisiting Klein and Meckling. *International Journal of Managing Projects in Business*, 5(4), 718-736.
- De Meyer, A., Loch, Ch.H., & Pich, M.T. (2002). Managing Project Uncertainty: From Variation to Chaos. *MIT Sloan Management Review*, 43(2), 60-67.
- Deal, T.E. & Kennedy, A.A. (1982). *Corporate Cultures: The Rites and Rituals of Corporate Life*. Reading: Addison-Wesley.
- Drury, M., Conboy, K., & Power, K. (2012). Obstacles to decision making in Agile software development teams. *Journal of Systems and Software*, 85(6), 1239-1254.
- Duchek, S. & Klaußner, S. (2013). Temporärer Umgang mit dem Unerwartetem [Temporary handling of the unexpected]. In Koch & Sydow (Eds.), *Managementforschung [Management Research] 23* (pp. 49-82). Wiesbaden: Springer.
- Duchek, S. (2014). *Organizational resilience: A capability-based approach*. Paper presented to the 30rd EGOS Colloquium. Rotterdam, the Netherlands.
- Foerster, H. von, (1984). *Observing Systems*. Seaside: Intersystems Publications.
- Geraldi, J.G., Lee-Kelley, L., & Kutsch, E. (2010). The Titanic sunk, so what? *International Journal of Project Management*, 28(6), 547-558.
- Hamel, G. & Valikangas, L. (2003). The quest for resilience. *Harvard business review*, 81(9), 52-65.

- Heidling, E. (2015). Erscheinungsformen und Typen von Ungewissheit in Projekten [Manifestations and types of uncertainty in projects]. In Böhle et al. (Eds.), *Umgang mit Ungewissheit in Projekten [Dealing with uncertainty in projects]* (pp. 13-57). München: GPM.
- Johansen, A. (2015). *Project Uncertainty Management: A New Approach – The ‘Lost Opportunities’* (Doctoral thesis). Retrieved from <https://brage.bibsys.no/xmlui/handle/11250/2373425>.
- Johansen, A., Halvorsen, S.B., Haddadic A., & Langlo J.A. (2014). Uncertainty Management – a methodological framework beyond ‘The six W’s’. *Procedia – Social and Behavioral Sciences*, 119, 566-575.
- Loosemore, M. (1998). The three ironies of crisis management in construction projects. *International Journal of Project Management*, 16(3), 139-144.
- Machina, M. J. (1987). Choice under uncertainty: Problems solved and unsolved. *The Journal of Economic Perspectives*, 1(1), 121-154.
- Maturana, H. (1982). *Erkennen [Recognizing]*. Braunschweig, Wiesbaden: Vieweg.
- Ortiz-de-Mandojana, N. & Bansal, P. (2016). The long-term benefits of organizational resilience through sustainable business practices. *Strategic Management Journal*, 37(8), 1615-1631.
- Perminova, O., Gustafsson, M., & Wikström, K. (2008). Defining uncertainty in projects – a new perspective. *International Journal of Project Management*, 26(1), 73-79.
- Sanderson, J. (2012). Risk, uncertainty and governance in megaprojects: A critical discussion of alternative explanations. *International Journal of Project Management*, 30(4), 432-443.
- Saunders, F.C. (2015). Toward high reliability project organizing in safety-critical projects. *Project Management Journal*, 46(3), 25-35.
- Saunders, F.C., Gale, A.W., & Sherry, A.H. (2015). Conceptualising uncertainty in safety-critical projects: A practitioner perspective. *International Journal of Project Management*, 33(2), 467-478.
- Söderholm, A. (2008). Project management of unexpected events. *International Journal of Project Management*, 26(1), 80-86.
- Strauss, A.L., & Corbin, J.M. (1990). Basics of qualitative research: grounded theory procedures and techniques. Newbury Park: Sage.
- Sutcliffe, K.M. & Vogus, T.J. (2003). Organizing for Resilience. In Cameron, Dutton & Quinn (Eds.): *Positive Organizational Scholarship* (p. 94-110), San Francisco: Berrett-Koehler.
- Välikangas, L. (2010). *The Resilient Organization*. New York, NY: McGraw-Hill.
- Weick, K.E. & Sutcliffe, K.M. (2007). *Managing the unexpected*. San Francisco: Jossey-Bass.
- Weick, K.E. (1988). Enacted sensemaking in crisis situations. *Journal of Management Studies*, 25, 305-317.
- Weick, K.E. (1993). The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster. *Administrative Science Quarterly*, 38(4), 628-652.
- Winch, G.M. (2010). *Managing Construction Projects: An Information Processing Approach*. Oxford: Wiley-Blackwell.
- Winch, G.M., & Maytorena, E. (2012). Managing Risk and Uncertainty on Projects. In Morris, Pinto & Söderlund (Eds.): *The Oxford Handbook of Project Management* (p. 345-3645). Oxford: Oxford University Press.
- Yin, R.K. (2014). *Case study research: Design and methods*. Los Angeles: Sage.
- Zhang, H. (2011). Two Schools of Risk Analysis: A Review of Past Research on Project Risk. *Project Management Journal*, 42(9), 5-18.