

Project Portfolios in Dynamic Environments: Organizing for Uncertainty

Yvan Petit and Brian Hobbs, University of Quebec at Montreal, Canada

ABSTRACT

KEY WORDS

*Portfolio Management
Dynamic Environments
Uncertainty*

This research investigates the impact of uncertainty on project portfolio management in dynamic environments. An uncertainty management perspective is adopted instead of the more established practice risk management. The research is based on case studies of four portfolios in two firms. The results of this research provide practical advice for practitioners, and several suggestions to improve PMI standards.

THE PROBLEM

PPM literature makes little mention of potential disturbances to the portfolio typically found in dynamic environments, such as new, terminated or delayed projects, incorrect planning due to high uncertainty, changing priorities, lack of resources on projects, changing business conditions, and new threats and opportunities.

Dynamic environments face additional challenges: changing goals, continuous re-planning, shorter time for decisions, poorer quality of information, and constant reallocation of resources.

Project portfolio management (PPM) refers to a set of processes and practices, which manages a group of projects and programs to achieve strategic business objectives.

The primary focus of project portfolio management (PPM) has been on how to select and prioritize projects to ensure that risks, complexity, potential returns, and resource allocations are balanced and aligned to corporate strategy in order to provide optimal benefits to the enterprise. PPM literature makes little mention of potential disturbances to the portfolio typically found in dynamic environments, such as new, terminated or delayed projects, incorrect planning due to high uncertainty, changing priorities, lack of resources on projects, changing business conditions, and new threats and opportunities.

The PMI Standard for Portfolio Management (Second edition) did suggest that changes to the strategy might result in a realignment of the portfolio. However, ad hoc disturbances to the ongoing and approved project portfolios were not properly addressed in research or standards. Dynamic environments face additional challenges: changing goals, continuous re-planning, shorter time for decisions, poorer quality of information, and constant reallocation of resources.

The dynamic capabilities framework is used here to study the management of project portfolios in dynamic environments. Within dynamic capability theory, resources and capabilities must be constantly reallocated and optimized to adapt to changing environments. Only a few such capabilities have been investigated empirically, and unfortunately, there are very few descriptions of how firms can implement and maintain dynamic capabilities in practice.

This research addresses these issues investigating four portfolios in two firms. Sufficient material was collected and analyzed to: provide a better understanding of the management of project portfolios; analyze the relationships among the sources of uncertainty in dynamic environments; develop a dynamic capabilities framework; and update the PMI Standard for Portfolio Management (Third Edition). The main assumption of this research is that the environment is unstable, and that uncertainty must be managed to mitigate the impacts on project portfolios, and, ultimately, on the implementation of organizational strategy.

THE STUDY

The four cases were selected in two firms that have well-established PPM processes and a high level of project management maturity, and that are in dynamic environments. Thus, they experience high levels of uncertainty. Data was collected through interviews and the analysis of documents available in the firms. Data from the first firm was analyzed and the conceptual framework was refined. Following the first analysis, two portfolios from a second firm were investigated with the updated framework. Further analysis was conducted over the four portfolios to identify differences, similarities, and patterns. The portfolios had the following characteristics:

Characteristics	Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4
Industry	Software	Software	Finances	Finances
Size	50 projects	25 projects	50 projects	25 projects
Organization size	Large multinat.	Large multinat.	Large national	Large national
PM history	30+ years	30+ years	30+ years	30+ years
P. Portfolio history	5 to 6 years	5 to 6 years	5 to 6 years	5 to 6 years
PM maturity	High	High	High	High

RESEARCH IMPLICATIONS

Definitions

One of the findings of this research is that clarity of definitions is essential. The terms reconfiguring and transforming are used interchangeably in the literature on dynamic capabilities, but as was discovered in this research, they refer to two different concepts. This clarification is a contribution to improving the dynamic capability framework.

In this research, the term reconfiguring is defined as the organizing mechanism used to modify the project portfolio and to reallocate human and financial resources within the portfolio. This includes actions intended to change the project portfolio structure; modify project scope, and change the allocation of financial and human resources. These are first-order mechanisms that use processes and structures that are already in place in the firm. Transforming is defined as a second-order organizing mechanisms used to modify the reconfiguring mechanisms or other organizational features affecting PPM. This includes introducing new structures, processes, or tools to support PPM activities.

Uncertainty Approach

In the *PMBOK® Guide*, a risk is defined as “an uncertain event or condition that if it occurs, has a positive or negative effect on one or more project objectives” (Project Management Institute, 2013, p. 559). The interviews revealed that in these organizations in very dynamic environments, they do not manage uncertain events or conditions, instead they manage sources of uncertainty. The sources are known, but what will occur in these sources is not. Rather than risk registers with long lists of uncertain events or conditions, they identify a small number of very important sources of uncertainty and use several processes and structures to monitor and to attempt to influence the sources of uncertainty. These are included in the reconfiguring processes and structure or first order mechanisms. Risk management was added to the second revision of *The Standard for Portfolio Management* from PMI and includes four processes: (a) identify portfolio risks; (b) analyze portfolio risks; (c) develop portfolio risk responses; and (d) monitor and control portfolio risks. Although risk management is appropriate in many portfolios, the concept of uncertainty and uncertainty management was considered more appropriate in the four portfolios studied.

Using uncertainty management instead of risk management draws attention to the need to understand and manage variability in the inputs to the project portfolio activities.

RESEARCH IMPLICATIONS *(continued)*

[Human resource management] is considered very important...but is rarely mentioned in the project management literature.

Based on the findings of this research, the continuous balancing of supply and demand of human resources was found an important process of PPM.

New Role

In the four case studies, specification of project content is the responsibility of someone other than the sponsor, the portfolio manager, the project manager, or the functional line manager.

In dynamic environments, PPM is not limited to the project selection and prioritization but includes the mechanisms to allocate content to projects. Scope specification is not only performed as part of clearly defined roles but also by bodies specifically created for this purpose. In the portfolios observed, the level of uncertainty is considered sufficiently high to justify the implementation of specific roles, organizational structures, and processes to address scope specification. Based solely on the results of this research, it is not clear if separate roles for scope management are due to the high level of uncertainty related to project scope or whether these roles would also be found in other contexts. This function is considered very important by all respondents but is rarely mentioned in the project management literature.

Based on the findings of this research, the continuous balancing of supply and demand of human resources was found an important process of PPM. Human resource management was completely absent from the second edition of the Standard for Portfolio Management, but was added to the third edition.

Tools, techniques and methods used to manage portfolios in dynamic environments include:

- Governance structure in two of the four cases is extremely complex
- Emergent planning approaches
- Scope control
- Controlled experimentation (probing the future)
- Life cycle strategies
- Management coordination and control
- Planned flexibility: Flexibility in product and in process
- Boundary-spanning activities
- Reduction of contingency at project level and use of contingency budget the portfolio level
- Introduction of a common board to analyze and plan project content
- Creation of portfolio level change control board to assess impacts of demands on all projects
- Common reporting templates and roll-up of cost tracking at portfolio level
- Contingency and management reserves are normally used. Contingency reserves address the cost impacts of the risks remaining during risk response planning. Management reserves are any extra funds to be set aside to cover unforeseen risks or changes to the project. Note that although contingency reserves are considered good practices in project management, all projects in these portfolios were not allowed contingencies at the project level. The contingencies were managed at the portfolio level instead

Additions of New Components

The Standard for Portfolio Management shows a process flow that assumes that a list of a number of components (projects, programs, and other work) is available and must be prioritized, balanced, and authorized. Once this is done, the monitoring and controlling processes are activated. In the four portfolios, when a new project request is submitted, the potential impact of this new project is assessed.

■ FINAL REMARKS

Practitioners interested in the relationships between the sources of uncertainty in dynamic environments and the organizing mechanisms put in place by organizations to manage project portfolios, can find more insights in the following paper from the same authors:

Petit Y and Hobbs B. (2010) Project Portfolios in Dynamic Environments: Sources of Uncertainty and Sensing Mechanisms. *Project Management Journal*, Volume 41 (September), Number 4.

■ FULL CITATION

Petit Y, Hobbs B. *Project Portfolios in Dynamic Environments: Organizing for Uncertainty*. Newtown Square: Project Management Institute, Inc., 2012.

FOR MORE INFORMATION

- PMJ articles and Sponsored Research monographs are available to members for free download.
- Monographs can also be purchased at the PMI Store on PMI.org.



From Academia: Summaries of New Research for the Reflective Practitioner | October 2014