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The Project Office as Project Management Support in Complex Environments

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Abstract

In the academic sector, most engineering research funding presupposes collaborative projects. Collaboration between academia and industry is encouraged. This approach creates successive complexity in most Research and Development (R&D) projects in many ways. Projects funded by the European Commission or jointly funded by national agencies are often encouraged to become large, competing companies may become partners, objectives are unclear, and overall vagueness usually increases with consortium size. Many companies and some research organizations have created project management offices (PMO) to deal with project complexity. Typically, project managers in research organizations are excellent researchers but less skilled or interested in project management. To help researchers stay focused on research and not get side tracked by project management, the PMO provides professional project management services to researchers and research projects. The combination of excellent research and professional project management is a success factor when handling a large portfolio of complex projects. We surveyed the directors of PMOs in Sweden to determine how PMOs cope with complexity in different organizations. This paper presents the results of that small survey and compares them with similar efforts at one Swedish university in a brief case study.

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1. Introduction

In this paper we discuss how project management offices (PMO) cope with complex projects. We illustrate this using a case study that describes the methodology of a reference PMO at a Swedish university. This PMO specialises in collaborative research and combines project management skills and research in a specific research environment to ease and improve the performance, productivity and the quality of complex projects. We suggest that professional project management in combination with excellent research is a success factor in managing a large portfolio of complex research projects.

1.1. Complexity in projects

Complexity is a term of reference for intricate structures and connotes a high degree of complication, difficulty and entanglement. Something complicated is intricate and difficult to understand; but a complicated problem still has at least one solution. Something complex involves true uncertainty and unpredictability; a complex problem does not have a single solution and perhaps not even a best solution.[1]

The International Project Management Association (IPMA) uses the following criteria to define complexity in projects:

'A complex project fulfills all of the following criteria:

a. Many interrelated subs-systems /sub-projects and elements should be taken into account within the structures of a complex project and in relation to its context in the organization.

b. Several organizations are involved in the project and/or different units in the same organization may benefit from or provide resources for a complex project.

c. Several different disciplines work on a complex project.

d. The management of a complex project involves several different, sometimes overlapping phases.

e. Many of the available project management methods, techniques and tools needed are applied in the management of a complex project. In practice this would mean that more than sixty percent of the competence elements would be applied.' [2]

IPMA offers a self-assessment tool that identifies three types of complexity.[3]

1. Environmental complexity
2. Content complexity
3. Resource complexity

Degree of complexity can be judged on a scale of 1 to 4, where 4 is very complex. Environmental complexity has four components:

1) strategic importance of project, 2) political conditions (if there is much disagreement or a demanding decision-making process), 3) number of unpredictable stakeholders who need individual care, and 4) dimension of change imposed on environment.

Similarly, Content complexity has four aspects:

1) complicatedness or unpredictability of project result, 2) technological innovation, 3) result structure, and 4) timeline and number of parallel activities.

Likewise Resource complexity involves 1) budget, 2) skill mix, 3) organisational structure, and 4) geographic distribution.

We have adopted the three-component definition (environmental, content, resource) for this paper.

1.2. Complexity in university-industry collaborative research projects

Types and degrees of complexity, and project phase, affect project management in different ways. Cooperative research projects can be considered complex in all these respects.

One challenge in terms of Environmental complexity may be specific funder requirements that complicate consortium-building. Many research projects are consortiums of up to 50 partners from many different sectors and countries. Companies may be competitors, have different organisational cultures, or be located in countries with conflicting legislation. This creates complexity among project stakeholders.