

Exploration and project management

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Abstract

Project management in academic studies tends to be regarded as an adequate solution to the problems raised by innovation. This paper sets out to question this tendency to equate projects and innovation which, in our view, can lead to the improper use of projects to manage innovation. We argue that, in line with the work on project classification, a distinction should be made between the various types of design situations to which different types of projects are suited. Qualitative research on automotive telematics allows us to identify the management methods suited to the most innovative projects, i.e. exploration projects for which neither technologies nor customer requirements are known at the start of the project. We will show how these situations shake up traditional project management models and will propose five management principles adapted to this new situation.

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1. Introduction

The strategic role of new product development and innovation [10,30,67,57] makes design performance a central concern for managers. Project management therefore appears to be an adequate solution to the integration problems raised by these activities. Adler [3], for example, sees the project as the main way to implement innovations. Work such as that by Clark and Fujimoto [18] has thus helped to make heavyweight project management a dominant organizational model. This is a major characteristic of American managerial literature. The leading US manuals (for example, Burgelman et al. [12]) cover in detail the way in which the innovation process is carried out, technology analysis tools, industry development, etc, but offer little insight into the organization appropriate to innovation. This topic is approached either via the resource-based model [30], from the perspective of functional policies or, when the question of integration is raised, via project man-

agement models. The article by Clark and Wheelwright [19] on heavyweight project management is therefore a key point of reference.

In this article, we wish to question this tendency to equate projects and innovation. This tendency can, in fact, appear surprising inasmuch as Clark and Fujimoto [18] indicate that their research does not take into account the question of advanced engineering or basic research (p. 26). We therefore believe that it can lead to improper use of the project format to manage innovation. We argue that, in line with work on project classification [5,60,67], a distinction should be drawn between the various design situations to which different types of projects are suited.

Qualitative research [23] conducted at a European automobile manufacturer will allow us to identify the management methods suited to the most innovative projects, i.e. those for which neither technologies nor customer requirements are known at the start of the project (referred to by Atkinson et al. [4] as “soft” projects). Following James March’s definition, we will call them exploration projects. We will show how these situations disrupt traditional project management models and we will propose management principles adapted to this situation.

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2. Projects and innovation: an analysis of the literature

2.1. Project and innovation management: the missing link

The links between studies devoted to project management and innovation management are complex and marked by a relative lack of communication between the two fields.

On one hand, there is a tendency in project management literature to equate project and innovative organization. Thus Cleland and Ireland [20] recommend project management “to any ad hoc undertaking” (p. 69) and state that “the justification for project management arises from the need for new or improved products, services or organizational processes” (ibid.). They then propose criteria for assessing the need to resort to a project and recommend its use for innovation situations. However, their reasoning stops there while the “newness” of the situation relates, as we will see, to very diverse situations. Furthermore it is striking to note the gap between a definition of projects that stresses novelty, and mainstream literature which propose an instrumental view of Project Management (typically the PMI Body of Knowledge, [22]). While criticized in recent years (e.g. the special issue of this journal on *Rethinking Project Management*, 2006, vol. 24 n°8) this “rational” view of project management as the accomplishment of a clearly defined goal in a specified period of time, within budget and quality requirements, remains dominant in most textbooks and discourses on project management [56]. But we can wonder if this is adapted to innovation management. Actually innovation is first and foremost characterized by divergence [66] and unforeseeable uncertainties which render the rational approach irrelevant [48].

On the other hand studies on innovation management maintain complex relations with those devoted to projects. Organization by projects is rarely mentioned, even if this mode of management is frequently underlying. Thus, the project format is typical of “organic” operations, although Burns and Stalker [13] make no reference to it. In the same vein, Van de Ven et al. [66] never mention it, although the situations studied often correspond to a project-based organization. Moreover, the principles proposed by Van de Ven in his 1986 paper (self-organizing autonomous units, redundant functions, requisite variety, temporal linkage, [65]) clearly correspond to project management. This format therefore seems, at first sight, to be the organizational model suited to innovation management (see also [54]).

This link between projects and innovation is also established by research on the key success factors of innovation. Maidique and Zirger [50] play here a pivotal role. Specifically, they show that managerial excellence, defined explicitly as effective project management, is the main reason for successful innovations [50, pp. 879–880]. But, again, the analysis of project management practices stops here, and they quote Nonaka and Takeuchi [57] as examples of best practices in the management of innovative projects.

2.2. The emergence of a dominant model

The link between projects and innovation is thus brought to the fore by the study of Japanese firms which, during the 1980s, were increasingly successful on the US and European markets. Works by Imai et al. [35], Nonaka and Takeuchi [57], Clark et al. [17] and Clark and Fujimoto [18] enabled us to formalize a model of project management, referred here to as the *Heavyweight Model*, that would be considered as a panacea to manage new product development in mature industries.

In our view, *Product Development Performance* (1991) constitutes a landmark contribution to the literature on product design and project management. Clark and Fujimoto started with performance data that showed the superiority of Japanese firms. They went on to present a detailed comparative analysis of product development practices at automotive manufacturers around the world. Their contribution is twofold.

Conceptually, the authors departed from the dominant Project Management literature which, as noted by Morris [55], focused excessively on project execution and the associated management techniques for planning, scheduling, cost control, etc. Instead, they drew on the literature on organization theory and R&D Management (see Chapter 2 in [18], especially the notes p. 32–33) and they regarded new product development as a set of information processing and problem-solving activities (see [8,37] for an analysis of the consequences of this approach). The aim of the overall process was to ensure the product’s integrity, i.e. its intrinsic qualities and its ability to meet the customer’s expectations. For a complex product like an automobile, the greatest management challenge was to establish organizational structures and practices that ensured adequate *integration* of diverse skills and knowledge, including the customers’ knowledge about what it was like to use the product. This illustrates the structural convergence between the project mode of organizing and the challenge raised by innovation. Indeed research on innovation management underlines:

- The crucial role of the *integration* of the expertise necessary to the success of innovation [34,38].
- The need for flexibility in order to adapt to the evolution of the environment and the resulting feedback between the different phases of the process [13,36,65].

This helps us to understand the attraction of projects in managing innovations even if, as we will see, this *a priori* convergence may be dangerous.

On the operational side, *Product Development Performance* brought into focus three important new management ideas which, interestingly, emphasize the importance of organizational factors in project success: (1) heavyweight project managers; (2) overlapping problem-solving cycles (also called concurrent engineering); and (3) the integration of customers and suppliers into product development activities (see [44] for a summary).

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