Staffing Project Teams and Career Development of Project Managers in the Project-based Organization: Towards an orthogonal approach

Dr Laurent BOURGEON

ESSEC Business School, Cergy-Pontoise, France

Email: bourgeon@essec.fr
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ABSTRACT
This paper shows how the companies having opted for a project-based organization of their new product development activity are managing the individuals involved in the projects. The results of the empirical study demonstrate that the project-based organization can be associated with a particular staffing approach of the project teams aiming to promote a renewed diversity of the teams and a specific logic of career development of the personnel involved in the projects aiming to allow the rotation of the functional managers in the projects. This specific way of staffing the project teams and managing the career development of the project managers in the Project-based Organization tends towards, what is called in the paper, an orthogonal approach.

Key words: Career Development, Human Resource Management, New Product Development Projects, Project-based Organization, Staffing Project Teams

INTRODUCTION
The evolution of the competitive environment has highlighted the ability of companies to develop new products both quickly and under good economic conditions – products which not only seek to satisfy the needs of clients but also bring them increased value – as a key factor of competitiveness (Gupta and Wilemon, 1990). In this new business context, fast and cost-effective product development has become a crucial organizational capability for a company’s performance and survival (Stalk and Hout, 1990). High-speed, fast changing business environment has increasingly challenged traditional organizational structures. In a context where the changing environment results in accelerated development and where the launch of new products is an important competitive issue, it becomes crucial to improve coordination and integration geared to flexibility. The acceleration of product
launches and the increasing sophistication of their features have led to the questioning of the structuring of new product development projects.

The emergence of the project-based organization as a way for organizing the new product development activity of the company arises interrogations as for the management of the individuals involved in the projects: How to staff the project teams? How to manage the career development of the staff involved in the projects led by the company especially project managers? Are some of these questions.

The present research identifies and shows what are the options developed in this particular domain by the companies having chosen a project-based organization of their new products development activity. In a first time, the main characteristics of project-based organization are presented. After that, it is demonstrated, through the results of the empirical study carried out, that the companies having adopted a project-based organization for their new products development activity have implemented a specific staffing approach in a renewed diversity perspective and a logic of career development favoring rotation of the functional managers in the projects. These results point out the critical link between what is called in this research “orthogonality” (staffing approach of projects guaranteeing the rotation of functional actors in the projects and the alternation of the duties carried out by the project managers) and the implementation of a project-based organization.

1 THEORETICAL BACKGROUND

Various authors have described the characteristics of the new competitive environment (D'Aveni, 1994; Brown and Eisenhart, 1998). Others have shown how the firms are responding to these new challenges, focusing on innovation challenges, looking for more integration between the various functions in the new product development process through the implementation of less formal and hierarchical organizational units (Cooper, 1994; Miles and Snow, 1994; Rothwell, 1992).
1.1 Organizational Conditions of the Improvement of the Performance of New Product Development Projects

In project-based organization, part of the activity of the firm is carried out through temporary organizational units: the projects. The projects are nothing other than a temporary processes. At the completion of the project's object (new product development, for instance), the temporary organizational unit being in charge of the process is dissolved and the project-actors move on to new projects or move back to their original functional department or to their previous duties (DeFillippi, 2002; DeFillippi and Arthur, 1998; Hobbay, 2000).

The concern of better mastery of these multifunctional processes is made growing during these last years in particular in industries where the product dimension is important and where the new product launches represent major strategic stakes for the company (Midler, 1993). About the management of new product development projects, the sequential process consisting in a succession of stages, whose execution concerns the various functions, has gradually yielded place to pluri-functional teams endowed with autonomy and decision-making power (Tarondeau & Wright, 1995). The points or "gates" of control and decision, where the transfer of information between specialists belonging to the various functions takes place, have been replaced by simultaneous processes of decision. The implementation of pluri-functional and autonomous project-teams responds to the need for decompartmentalizing the activities involved in the process. This is making it possible to notably reduce the weight of the indirect activities of administration and coordination which may represent up to 50 % of the total time of the project (Rothwell, 1992).

When the needs for horizontal coordination override the benefit generated by the specialization of the functions and of the individuals, the project-based organization is progressively replacing the functional or matrix structure. By supporting the intensification of the exchanges of information during the first stages of the projects, this decompartmentalization of the activities involved in the new product development process allows the implementation in a simultaneous way of phases (simultaneous development), before being carried out in a sequential way, and becomes a factor of reduction of the duration of the development process (Clark & Fujitomo, 1991). Beyond the reduction
of the time to market of new products, which remains the principal concern of the R&D activity (Gupta & Wilemon, 1996), the company must also control the costs relative to the projects and take into account the value brought to the customer. The project-based organization grants the projects, by the integration that it implies, with autonomy from the functions and endows them with decision-making power and direct responsibilities.

1.2 New Articulation Projects / Functional Departments

These new priorities are likely to call into question the established structures and the distribution of power within the company. In a functional structure, the functions are perceived like the main sources of improvement of the company’s performance. These functional boundaries clearly define territories and it is on the results of his or her territory that each manager, whatever his hierarchical level, is evaluated. If such an organizational structure generates behaviors of defense of the individual territories, sources of power in the organization, it also poses the question of the mode of career development of the actors involved in the projects (especially the project managers).

Within a project-based organization, in which must count the value offered to the customer who is not concerned by the degree of participation of one or other but well rather by the value of the total result, it is mainly the co-operation between these functional territories and the coherence of the actions carried by them that generate value for the customer. Then such a structure naturally generates collective learning and synergies calling into question the usual territories of power. The value gathered by the customer is more the result of the quality of integration obtained between activities than the sum of the successes of the successive functional areas of competence (Tarondeau & Wright, 1995). In this context, how to valorize the project experience of the individuals in the perspective of their career development?

The quality of integration partly finds its source in the process of the product development itself. It is the role of the project director to manage the available competences, to create the value desired through the best possible integration and finally to support the collective learning during the project. But this quality of integration has also like requirements the disposal of high potential managers by the
various functional departments of the company. Thus the power in the organization is not simply transferred from the functional managers to the project manager. The functional managers keep a dominating role in the capitalization and in the diffusion of knowledge within the company. But the role of project managers is also essential because nothing makes it possible to think that the today’s problems could intelligently and systematically be solved on the basis of functional departments knowledge, even if this knowledge is inherited from an extremely recent past. The implementation of a project-based organization poses the question of the staffing approach of the project teams privileged by the company.

The first proposition (H1) is therefore:

The firms having opted for a project-based organization of their new product development activity tend to implement staffing approaches of project-teams guaranteeing the rotation of functional actors through the projects.

And the second proposition (H2) is:

The firms having opted for a project-based organization of their new product development activity tend to implement logic of career development of their project managers guaranteeing the alternation of duties.

2 METHODOLOGY

To test these research propositions, a survey with the heads of Research and Development of 264 French industrial companies was conducted.\(^1\)

Identification tools of the staffing approach and of the project managers’ career development adopted by the company were developed and a measurement method of the organizational structure of the new product development activity was derived from the research of Larson and Gobeli (1987).

\(^1\) A postal survey with the heads of Research and Development of 264 French industrial companies was conducted, of which 93 were returned (81 valid responses remained, representing an effective response rate of 35.5%).
2.1 Identification of the Staffing Approach and the Project Managers’ Career Development Adopted by the Company

In a preliminary stage, interviews carried out with five R&D directors of European industrial companies made it possible to point out the three main approaches of the project team’s staffing.

Three types of approaches seem to prevail:

1. Continuation of a team having already proved itself;

2. Staffing the project team on the basis of members of the company who have already taken part in various projects but having never had the occasion to work together on a project;

3. Staffing the project team on the basis of members of the company who have never had the occasion to work together on a project and for the majority of them having never taken part in a project.

An identification tool of the career development logic concerning the project managers and implemented by the firm was also highlighted during these interviews. So the career development approach in place in the companies is identified through the position of origin (before the project) and the following position (after the project) held by the project managers (functional position, product manager position, production manager position, project manager position). So the eight variables describing the career development of the project managers are relative to the position of origin and position of destination of the project managers in the company before and after the projects.

The proportion of project managers (in %) in the company according to their position of origin and destination constitutes here the indicator making it possible to grasp the project managers’ career development mode implemented by the company.

2.2 Identification of the Organizational Structure of New Product Development Projects

Larson and Gobeli (1985) and Clark and Wheelwright (1992) have successively proposed typologies of organizational structures of the new product development activity. The identification tool of the
organizational structure implemented by the companies of the sample was developed on the basis of their research works.

The variables are:

- The project manager authority for completing the project;
- The project manager responsibility for completing the project;
- The authority of functional managers over their specific segments of the project;
- The responsibility of functional managers for their specific segments of the project;
- The autonomy from their functional hierarchy of all functional personnel assigned to the project director.

Furthermore, two variables take into account the organization of the new product development projects were added:

- The dedication of the project-actors throughout the duration of the project (i.e. the assignment of functional personnel to the project on a full-time basis) and
- The implementation of a project platform (i.e. specific location for the project).

2.3 Data Analysis Method

A three-stage data analysis procedure was carried out. In the first stage, factor analyses were used to reduce the number of variables characterizing the two phenomena (i.e. organizational structure of the new product development projects and career development of project managers). Thus, were identified the main dimensions of these two phenomena. In the second stage, a cluster analysis was carried out to identify and to assess the underlying group structure of the sample firms in relation to each “phenomenon”. Then in the third stage, variance analyses (ANOVA) were carried out in order to explain the group membership (the projects’ organizational structure) of the sample firms (dependent variable) by the staffing approach implemented by the firms (independent variable), in the first ANOVA, and by the logic of project managers’ career development implemented (independent variable) in the second one.
3 RESULTS AND COMMENTS

3.1 Characterization of Project-based Organization

The first factor analysis carried out highlighted the main dimensions characterizing this organization among the eight variables making up the identification tool of the organizational structure of the new product development projects. This first dimension that characterizes project-based organization is the authority and responsibility of the project director. In a project-based organization, the project director alone has authority over the project (without sharing it with the functional managers) and assumes all the responsibility for the completion of the project.

The second dimension of the project-based organization is the specific organizational unity - both spatial and temporal - granted to the projects in the organizational space of the company. The spatial and temporal unity of the projects in the company is obtained through the setting up of project platforms and the dedication of project-actors for the duration of the projects.

Finally, in a project-based organization, the project-actors only depend, from a hierarchical point of view, on the project director and no more on the hierarchy of the functional department from which they themselves come. This hierarchical attachment of the project-actors with the project director confers a relative autonomy on the project vis-à-vis the structure of the company. The autonomy of the project teams constitutes the third dimension characterizing the project-based organization².

3.2 The Main Dimensions of the Logic of Career Development of the Project Managers

In the first stage of the data analysis, following the same logic than for the characterization of the project-based organization, a factor analysis was carried out in order to highlight the main dimensions underlying the logic of career development of the project managers in the companies.

The first dimension characterizing the mode of career development of the project managers consists of the constitution of a corps of project management specialists within the company. These project

² It is on the basis of the respective positions (factor scores) of the sample's companies on these three dimensions that the organizational structure characterizing their new product development projects is highlighted in the second stage of the data analysis.
specialists are put in charge of new product development projects led by the firm throughout their career in the company.

The second dimension embodies alternation in the logic of career development of the project managers: project-product or project-function alternation modes.

Finally, the third dimension characterizing the mode of career development of the project managers is a technical logic consisting of alternating new product development project duties and production duties.

The logic of the project managers’ career development in place in the companies of the sample was highlighted on the basis of its respective position on these three dimensions. A cluster analysis was carried out aiming to classify the companies according to the logic of career development of project managers from their respective positions on each dimension characterizing these HRM practices. The classification generated four homogeneous groups of companies.

### 3.3 The Logic of Career Development of the Project Managers in Project-based Organization: Privileging the Alternation of the Project Managers’ Duties

Concerning the career development of the project managers (cf. Table 1), the first logic aims to constitute a corps of project specialists in the company and also includes the technical logic prioritizing a production-project rotation. The second logic consists of a “pure” alternation: functional duty / project management rotation or product-project management rotation.

#### TABLE 1
Career Development and Organizational Structure

<table>
<thead>
<tr>
<th>Organizational Structure of New Product Development Activity</th>
<th>Mean Career Development of Project Managers</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matrix or Function Matrix</td>
<td>2.1</td>
<td>0.025</td>
</tr>
<tr>
<td>Project-based Organization</td>
<td>2.617</td>
<td>5.23</td>
</tr>
<tr>
<td>F</td>
<td>1,032</td>
<td>1,101</td>
</tr>
</tbody>
</table>
This analysis of variance shows that the logic of project managers’ career development seems to be linked with the organizational structure implemented. So, the companies having adopted a project-based organization are significantly privileging alternation of duties as the logic of career development for their project managers. These results validates the first research proposition. But beyond the question of the career development of the personnel, the more general question of the valuation of the functional actors’ participation in the various projects led by the firm arises. This question is posed with all the more acuity for the actors having held significant responsibilities during the project, sometimes leading them to call into question the power's territories of the functional departments through strong choices made during the project.

3.4 Staffing Project Teams in Project-based Organization: Privileging the Rotation of Functional Personnel in the Projects

Concerning the projects’ staffing (cf. Table 3), the first approach corresponds to the systematic continuation of the teams. The second approach corresponds to the constitution of the project teams on the basis of individuals having already taken part in various projects but having never had the occasion to work together in a project. The third approach is relative to the constitution of the project teams on the basis of functional actors having never had the occasion to work together within a project and for the majority of them having never taken part in a project.

| TABLE 2 |
| Staffing Approach and Organizational Structure |

<table>
<thead>
<tr>
<th>Mean Standard Deviation</th>
<th>Organizational Structure of New Product Development Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Matrix or Function Matrix</td>
</tr>
<tr>
<td>Staffing Approach of the Project Teams</td>
<td>2,209</td>
</tr>
</tbody>
</table>

Examining the results of this analysis of the variance (in Table 2), the staffing approach of project teams seems to be a linked to the organizational structure of the new product development projects. As
such, the companies, whose new product development projects are characterized by a project-based organization, mainly privilege (63.22%) a staffing approach on the basis of functional managers who have never taken part to a project or have never had the occasion to work together within a project. Conversely, a logic of constitution of the team-project consisting of taking back teams that have already proved themselves in the management of former projects appears to accompany a matrix or function matrix organization of the new products development activity.

The staffing approach implemented in the project-based organizations favors the job rotation of the functional actors in the various projects led by the company. This job rotation can be viewed as a way for the company developed learning and increase human capital accumulation (Campion *et al.*, 1994).

### 4 DISCUSSION AND CONCLUSION

The companies that have decided to create a corps of project management specialists privilege what Midler (1993) calls a methodological approach of project management centred on tools and techniques. On the other hand, some other companies emphasize a widely diffused project management competence. This competence is diffused within the firm through the rotation of the personnel involved in the successive projects and the alternation of duties carried out by the project managers. The functional personnel's rotation in the various projects led by the firm also appears to be a paramount way to favor collective learning during the project and inter-project capitalization on this learning (Garvin, 1993).

The renewed diversity, implying the rotation of functional actors in the various projects led by the company, can be viewed as the “orthogonality” of the logic of job rotation, orthogonality between the projects – the horizontal dimension of the organization – and the functional departments – the vertical one –. This approach is possible only if the available human resources, taking into account both the relative size of the projects led by the company compared with the company’s size and the relative degree of specialization of actors with regard to the needs of the various projects, are sufficient. Moreover, the company must provide a clear valuation of project experience in the career management of the personnel having been involved in the projects. If the renewed diversity is the condition of the
diffusion of project culture within the organization, the career management of the projects’ actors is the vector of its diffusion.

This research demonstrates that the companies having implemented a project-based organization of their new product development activity tend to privilege the rotation of the functional personnel as project team staffing approach and the alternation of duties held by the project managers. Moreover, this research embracing organizational structure issues, project management aspects and HRM perspectives raises certain questions such as the issue of the transfer and memorization of learning developed during the projects.

The project-actors bring with them much of the knowledge created within the project and the new knowledge created within the projects is embodied in the tacit experiences of these actors (Davenport and Prusack, 1998). These actors are also effective vectors for the transfer of the knowledge developed during the projects. The company must make sure that this transfer is effective if it wants to ensure that the learning does not remain a simple local knowledge tacitly embodied by some individuals and so to profit from their contributions. Indeed, these ideas can carry a significant impact on the organization only when they are largely diffused rather than held by a limited number of individuals (Garvin, 1993).

Finally, this approach of staffing new product development projects teams, implying the rotation of functional actors in the various projects led by the firm, can also be seen as a way for the company to learn about its employees and its activities (Ortega, 2001). This relation between the factors leading to the implementation of job rotation in the company and the projects staffing approach adopted would constitute an avenue for future research.
Bibliography


