



Leading New Product Development Teams

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The performance of organizational teams is a multidimensional construct, which can be defined as the extent to which a team is able to meet established objectives (Hoegl & Gemuenden, 2001). In New Product Development (NPD), specific dimensions of team performance include the adherence to predefined technical performance and quality, the meeting efficiency targets, and innovativeness (Ancona and Candell, 1992b; Hoegl & Gemuenden, 2001). Technical performance and quality refer to certain desired properties of the output produced by the team. For a NPD team in charge of designing a specific part of a larger product, several properties may be important, including functionality, manufacturability, durability and robustness, dimensional integrity, as well as optical and tactile attractiveness. Efficiency comprises adherence to budget objectives and adherence to schedule objectives. Adherence to budget objectives refers to the costs associated with the team's development activities (i.e., personnel, prototype material, testing, and so on). As for schedule objectives, all groups in a multi-team project are included in an overall sequence of milestones (design reviews, and so on) where certain deliverables are expected at predefined times, which, in turn, provide necessary input for other teams. Innovativeness of the team refers to number of new products, processes or ideas introduced by the team.

Team performance objectives can take many forms (e.g., quantity, speed, accuracy, efficiency, service to others) but the clarity or specificity of those goals can strongly affect their attainment. In order to combine efforts effectively, team members have to understand jointly what it is they are trying to achieve. Much research also indicates that involvement in goal-setting fosters commitment to those goals (Locke & Latham, 1990), and consequently better group performance. Moreover, scholars have also directed their attention toward understanding the mechanisms through which objectives impact group outcomes. Weingart (1992), for example, argued that members' effort and quality of the planning process mediated the effect of goal difficulty on performance, and found that group goals raised member effort, which translated into greater team performance. Moreover, Katzenbach and Smith (1993) reported that the existence of clear, unambiguous goals provide benefits pertaining to: the work content of the team's task, the basis for clear communication and constructive conflict among group members, focus on achieving desired outcomes, how members' unique expertise can be best utilized, and the increased motivation of the group. These positive effects of clear strategic goals are illustrated in the example that follows from a recently undertaken case study.

In an SME dedicated to developing advanced bio-economy and carbon recycling technologies, the power of clear mission, strategy and goals, has been a key success factor for carving out a niche market from a record successful process innovations. Building on its mission 'Science to Achieve Results', bridging the gap between research and innovation is an integral part of this company's mission, and a main explanatory factor behind its strong innovation focus in all its collaborative R&D activities. Strategically speaking, the company sets its R&D agenda and selects projects only if they fit 100% with its mission and technology development directions. Moreover, it systematically integrates existing or potential customers in the projects, thus ensuring a potential offset market for what is being developed.

Positioned in a high growth but still immature market, the strategy in terms of 'where to go' –sustainable lead in environmental technologies with emphasis on recycling- and in terms of 'how to get there' –be an innovative solutions provider- reinforce the technology-based innovation focus maintained in project activities. Building on this strategizing, explicit goals in terms of market penetration, application of new science and are set, monitored and continuously stretched; As the entrepreneurs summarized the approach "On our narrow road, we want to be the best, the most concentrated and focused to collect and exploit all the available knowledge in the field".

Leading Teams for Goal Achievement

Team leaders have a key role in achieving team goals, as well as in monitoring and sustaining a high team performance. Team leaders should be capable of performing a range of leadership behaviors that promote teamwork, organize and direct project work, manage relationships with external stakeholders, and stimulate creativity and innovation (Hirst & Mann, 2004).

Effective team leadership has been reported as one of the most important vehicles for directing and steering project successfully, especially in those situations concerning a new product development process (Keller, 1996). For example, recent studies (e.g., Lovelace et al., 2001) suggest that the characteristics of group leaders significantly affect the work climate and learning in teams, in such a way that leaders may set a positive and safe environment and resolve issues that would otherwise result in extensive, dysfunctional conflict. Cumulatively, these actions are most likely to increase group members' feelings of freedom to express task-related doubts, engage in constructive dialogue, establish trust and collaboration within team, and enhance the application of acquired knowledge (Edmondson, 1999).

Barry (1991) conducted a detailed qualitative study of engineering and product development teams, and he identified four leadership roles that are critical to ensure teams are able to tackle the challenges of R&D work. Further refined by Yukl (2002) these roles are:

- Boundary spanning,
- Facilitative,
- Innovation-stimulating leadership, and
- Directive leadership.

Leaning on a series of case studies of NPD teams conducted over several years, we attempt to shed some light on these dimensions.

Boundary spanning leadership involves coordinating the team's task with outside stakeholders, managing 'outgroup' relationships and negotiating resources and objectives (e.g., with top management executives, suppliers, and users) as well as scanning for information and ideas. In our case studies the seniority and tenure within the organization, as well as the social capital built up by the team leaders, were the factors identified as determining for effective boundary spanning leadership. "It is fundamentally a question of the network one has built up over the years, both inside and outside the company, and how much one can actually leverage this network", as one team leader stated.

Facilitative leadership refers to whether the leader encourages an atmosphere conducive to teamwork, ensuring all team members have the opportunity to express their ideas and opinions and participate in group's activities, sharing of valuable information and discussion of different perspectives. The most essential factor for effective facilitative leadership identified in the case studies was the attitude towards errors adopted by the team leader. "Having worked under many team leaders over the years, and even under more than one at the same time, what makes a difference is whether the leader searches for the who or the what behind problems and errors that turn up", explained a senior technical expert we interviewed. He continued: "The 'who-focused' instills fear in the teams, while the 'what-focused' leader instills a learning culture that encourages everyone to work together for a common best solution".

A leader who acts as an innovator envisions project opportunities and new approaches by questioning team assumptions and challenging the status quo. Analyzing innovation drivers in our case studies, the leadership element that quite naturally stood out is that of a creative leader. But creativity is not enough; it has to be coupled with a capability of envisioning a real end state, i.e., the specificities of a new component, product or process that provide the team with enough orientation in order to be able to materialize what is innovative. "It's maybe tough for my collaborators, but I tend to position my team's goal in what I call the 'extreme quadrant' which means 'never thought of – never tried', envisioning what someone might conceive as

impossible to make but really extraordinary to have. Then I do all I can to have the people with me, even if some of the feels it's like jumping out of the window on the 10th", expressed one project manager with an exceptional record of new product innovations from his teams. Both team members and R&D Managers in his organization agreed that the combination of tough goals ("looking at his record, we call them tough now and not impossible as we used to..." as a team member clarified) and a strong drive of trying them out in practice are keys to the high innovation performance of the organization.

Finally, directive leaders achieve structured and ordered performance of project work by communicating instructions, setting priorities, deadlines and standards. From our case studies, this leadership dimension comes out as a necessary but not sufficient condition for high NPD performance. In cases of projects failing on one or more of the performance criteria, the lack of plans, structured project management rules or blurred communication was the largely dominating cause. However, no interviewees attributed great new product successes to this dimension alone. "Lack of adequate management can indeed break the success of the project, but on the other hand structure and rules is not what will make that great innovation success", as a senior engineer stated it.

In order to achieve desired and targeted New Product Development Performance, i.e., technical performance and quality, efficiency and innovativeness, team leadership is critical. Having discussed briefly the nature of objectives and the importance of them being clear and specific, we identified four leadership dimensions in the literature and searched for an enrichment of them from a series of case studies of NPD teams conducted over several years. Our analysis emphasizes the strong complementarity between these dimensions. The directive leadership emphasizing rules, structure and reporting is a necessary platform for the project to advance and for R&D management to supervise resource allocation and dynamically adjust strategy. On the opposite side, the innovation-stimulating dimension, which translates into a strong envisioning power and implementation capability, is what will produce an outcome that is really new and innovative, with high potential of commercial success. In between, we find the dimensions which are more internal to the interpersonal dynamics of the team and its leadership. The boundary spanning dimension is necessary for facilitating the progression of the project, and for making the team lean and efficient in its interaction with other players inside and outside the organization. The facilitative dimension, finally, is the one that will ensure an appropriate climate enabling effective interactions and continuous learning within the team.

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