Compensation Challenges for Cross-Functional Product Development Teams

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Abstract: New product development (NPD) projects present distinct organizational challenges in terms of their execution: they require specialized competencies, which prompt cross-functional collaboration. Collaboration implies significant interdependencies between the functions, including both, organizational factors (i.e. cross-functional coordination), and those arising from the problem structure (i.e. underlying relationships between the market and technology). Such collaboration takes place in an uncertain NPD setting, where the effort put forth by each specialist is non-verifiable. Within such a setting, senior management must ensure that functional specialists contribute towards management’s objective (maximize profit). This study evaluates operational implications of incentives that compensate specialists based on either, their functional contribution, or team output (project profit). Specifically, we look at how, project uncertainty, functional interdependencies, and team heterogeneity, affect management’s optimal choice of compensation. We uncover key sources of tension associated with management’s decisions regarding compensation: management benefits by employing team incentives for projects with high uncertainty; however, when there exists substantial diversity regarding the specialists’ capabilities (cost of effort), functional incentives are preferred. Interestingly, we show that management benefits by offering specialists that exhibit coordination synergies, compensation that is based on functional contributions.

Keywords: Cross-functional NPD, Incentives in NPD, NPD Organization.

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1 Introduction

Firms that engage in new product development (NPD) projects are critically dependent on the ability of cross-functional teams to work collectively towards the common project objective. However, assuming the de facto existence of such cross-functional congruence of objectives is simply not realistic. The specialized and uncertain nature of NPD tasks performed by distinct functions, primarily marketing and engineering, and the interactions that arise during the NPD process, present challenges regarding senior management’s ability to establish such congruence.

Cross-functional interactions emerge during a NPD project through multiple sources: they may be an organizational outcome (i.e. different organizations are more, or less, effective at managing coordination and collaboration through specific rules or routines, see Mihm et al. 2003), or they may be environmental factors relating to the market and technology, which define the particular problem the NPD team is addressing (Erat and Kavadias 2008, Oraiopoulos and Kavadias 2009). Their presence, however, poses an important managerial challenge: senior management needs to account for them when setting objectives, and respective performance plans, for NPD teams (Feltham and Xie 1994, Loch and Tapper 2002). Faced with such challenges, senior management resorts to “proper” incentive and compensation structures that try to align the objectives of the project stakeholders (i.e. senior management and the functional specialists) towards the common – and beneficial to the firm – profit maximization, while accounting for the synergies, or coordination challenges, that exist between the functional experts (Griffin and Hauser 1996, Dutta et al. 1999, Balasubramanian and Bhardwaj 2004).

NPD tasks present additional challenges when it comes to rewarding contribution: tasks are characterized by significant uncertainty associated with their outcome, coupled with the inability to observe and measure the precise amount of intertwined stakeholder efforts. Thus, the criticality of properly setting the objectives and associated rewards becomes of paramount importance. Improper administration of the objectives and performance plans may result in unnecessary value loss due to intra-organizational friction or conflict.

Past literature has recorded the challenges of such cross-functional interactions, with a special emphasis on the classic friction between marketing and engineering (Allen 1985, Souder and Chakrabarti 1978, Griffin and Hauser 1996). Typical examples of the tension attributed to this dyad could be: marketing stating that their contribution is not valued by the firm, or by engineering, or engineering complaining about unequal compensation of the effort they exert towards the project objective. However, the majority of the extant literature has focused on recording the causes of friction, and measuring their effect on project performance. Instead, we aim to understand how senior management can employ a basic lever, such as the incentives implied by a compensation plan, to accommodate these realities, (e.g. lack of communication and coordination), while maximizing firm profits. Therefore, we focus on the different structures employed in performance plans in an effort to understand which ones offer the best results. Faced with this situation, the project manager chooses between two (typical) performance plans employed in practice (Sarin and Mahajan 1991): functional (input) or team (project output) rewards schemes. These two plans
capture a key trade-off: the former offers a more precise signal of effort (i.e. there is less uncertainty associated with the observed measure), yet it induces a less congruent objective; the latter offers a more congruent objective among stakeholders, yet this comes at the cost of a less precise signal of effort.

Our aim is to investigate how senior management’s preference towards either incentive plan depends on four specific characteristics unique to the NPD context: i. the uncertainty associated with the project; ii. the correlation between the factors affecting each function’s uncertainty; iii. the coordination exhibited by the NPD organization; and iv. the team heterogeneity regarding each functions capability (their cost to exert effort). In particular, we ask the following research question: When will senior management prefer to offer the specialists a performance plan based on their (observable) functional contribution, as opposed to one that uses the project outcome (profits) as the (observable) baseline?

In order to answer this question, we develop a normative model, where a senior manager determines the form of compensation plan (incentives) to offer a cross-functional NPD team of specialists, in order to maximize the senior manager's utility (net profit) for a specific project. The NPD functions are characterized by their ability to coordinate on the project, while the project itself, is characterized by the uncertainty associated with the specific market and technology environment. Each stakeholder makes the following decisions: senior management decides the type, and magnitude, of incentive plan; and the specialists choose their respective effort level. At the same time they are subject to two important contextual challenges: the uncertainty regarding the outcome, and the inability to discern the exact causes of either bad or good outcomes.

Our findings offer several managerial insights regarding the choice between different performance plans. We uncover a key source of tension that exists for senior management when deciding on the type of incentive to offer. We show that for projects that have high uncertainty associated with them, senior management prefers team-based incentives. However, when the capabilities of the project team are diverse with respect to each specialists respective cost of effort, senior management would prefer a functional incentive plan. Thus, we are left with two common traits of an NPD project team, where each one drives senior management in opposing directions. Finally, we formally show a paradox regarding team behavior: When a NPD organization is comprised of functional specialists that coordinate well with one another, a trait conducive to teamwork, senior management would prefer not to offer team-based compensation. Said differently, senior management prefers to decouple the incentives of a NPD project team that exhibits significant synergies.
References