

R&D–Sales Integration in the Initial Stage of New Product Development: Does It Always Benefit Product Innovation Success?

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Few would argue that the sales function is one of the most important sources of market information in new product development (NPD). Because salespeople and sales executives have the closest contact with customers, the sales function can gather unique market intelligence “on the front lines” and absorb insights from the competitive environment that are beyond the reach of other participants in the NPD process (Anderson and Dubinsky 2004). To exploit these unique informational resources, researchers advocate that the sales function interact closely with other functions in the NPD process (Gordon et al. 1997), especially in the early phases that lay the foundation for innovation success (Ernst, Hoyer, and Rübsamen 2010). In this regard, cooperation between sales and research and development (R&D), also termed *R&D–sales integration*, is of particular importance, because this interface comprises market- and technology-related skills and capabilities, whose integration is critical for new product success.

The effectiveness of R&D–sales integration for new product development should depend on contextual factors. Theory suggests that cross-functional coupling might benefit innovation success, because the functions can mitigate informational uncertainty by sharing individual informational resources. Moenaert and Souder’s (1990) information processing model posits that the success of innovative endeavors depends on firms’ capacity to process information in order to reduce uncertainty related to customers, competitors and technology. From this theoretical perspective, interaction between R&D and sales would afford firms greater benefits under conditions of higher uncertainty and thus lead to a stronger need for information sharing among market- and technology-related functions. On the other hand, when firms operate under conditions of less uncertainty, the need for information sharing may be diminished and, consequently, R&D–sales integration may not have the same beneficial effects. However, prior studies do not examine whether and how contextual factors affect the relationship between R&D–sales integration and product innovation success.

Our paper addresses this void in the research. We develop a conceptual model that tests moderating effects for a series of variables that may affect information processing requirements and effectiveness between R&D and sales. First, we examine market turbulence and technological turbulence, two variables related to the environmental context, which likely affect technology and market-related uncertainty. Second, we investigate the product characteristics of product complexity and customization, which we expect to exacerbate customer-related uncertainty. Third, we look at characteristics of the sales department. Our model assumes that integration of R&D and sales is more effective when sales has a higher innovation orientation and greater technical knowledge. On the other hand, however, we expect that the effectiveness of R&D–sales integration will diminish when sales is too cost-focused. To test our research model, we collected survey data from key informants of 230 companies across a range of industries. We relied on a dyadic approach that uses data from two informants in each organization.

Results of our empirical examination suggest that contextual factors can either amplify or diminish the effect of R&D–sales integration. We find significant positive moderation effects for technological turbulence, product complexity, and sales department innovation orientation. Effects of R&D–sales integration on product innovation success are stronger for higher values of

these moderators, whereas no significant effect emerges for lower values. However, the moderation effect of cost consciousness operates in the opposite direction, indicating that the positive effect of R&D–sales integration weakens when sales focuses too closely on costs.

We collected dyadic survey data from senior executives across multiple industries in which the issue of integrating R&D and sales into NPD is of importance. We obtained dyadic responses from 252 firms, yielding a response rate of 18% that compares favorably to prior multi-informant studies in the marketing literature (Homburg, Artz, and Wieseke 2012). Each dyad included one respondent from the market side (e.g., head of sales, head of marketing) and one respondent from the technical side (e.g., head of R&D, technical director). Since our research question requires assessments from experienced key informants, we discarded four dyads in which one respondent indicated that s/he had less than five years of professional experience. Further, we excluded 18 dyads because they had missing values for at least one of the main constructs of our model. The final sample used for data analysis comprised dyadic data of 230 firms.

Prior research argues that cross-functional integration in NPD allows firms to tap the diverse resources of different functional subunits more effectively and therefore raises the chance of product innovation success (Ernst, Hoyer, and Rübsamen 2010). Our study suggests that for the case of the R&D–sales interface, this theoretical perspective needs refinement because it does not take into account that information requirements depend on contextual factors that exacerbate or diminish customer-, competitor-, and technology-related uncertainty (Moenaert and Souder 1990). This theoretical argument suggests that the effect of R&D–sales integration on product innovation success is contingent on context variables.

Our study tests a series of contextual factors pertaining to the firm’s environment, the characteristics of the firm’s products, and the orientations and knowledge of the sales department, yielding interesting theoretical insights. For instance, we find that technological turbulence and product complexity moderate the relationship between R&D–sales integration and product innovation success. This finding indicates that the informational resources the sales function contributes are of increased importance in mitigating uncertainty in complex product categories and turbulent technological environments. On the other hand, when technology is stable and product complexity is lower, R&D–sales integration has *no* effect on innovation success, because under this condition, the commercialization of technological resources is less challenging and the need for direct access to market intelligence is less pronounced.

Our study suggests that the sales department’s innovation orientation and cost consciousness affect the relationship between R&D–sales integration and product innovation success. In our theoretical framework, these findings can be attributed to the effect of these variables on information sharing between R&D and sales. A sales department that is high on innovation orientation can contribute more productively when involved with R&D, because it is more accepting of new ideas and more open to risky ventures and new ways of approaching problems. On the other hand, the positive effect of R&D–sales integration is weaker when the sales department is less accepting of innovation, presumably because sales may be more likely to turn down innovative product concepts or promising but unconventional ideas. However, the moderation effect of cost consciousness operates in the opposite direction, with high cost consciousness *decreasing* the positive effect of R&D–sales integration. When sales is strongly

cost-oriented, project budgets may be calculated more tightly and cost constraints may hamper innovative effort and creativity.

Overall, our study refines and expands prior research on NPD, because its findings show that context variables such as environmental conditions, product characteristics, and the characteristics of the sales department affect the efficacy of R&D–sales integration. Thus, from a theoretical perspective, studies examining cross-functional integration in the early phases of NPD should consider these factors to reconcile the resource-based perspective and the information processing perspective.

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