

Re-visiting the Interface between Engineering and Marketing

Henri Simula⁺

Aalto University, School of Science, BIT Research Center, Finland

Abstract. One of the central topics in innovation management is to ensure the collaboration with different organizational units. The interface between engineering and marketing is especially problematic. The focus of this conceptual paper is to investigate this interface based on the extant literature.

Keywords: Engineering; Marketing; Interface; Collaboration; Innovation

1. Introduction

Organizing for innovation [1], organizing for product development [2], and organizing for better management of internal and external information flows in the innovation process [3] have long been studied. This paper briefly analyzes the interface between engineering and marketing and aims to shed light to the difficulties hindering new innovation creation due to the associated problems.

2. Cross-Organizational Collaboration

The call for cross-organizational collaboration becomes obvious when we consider the key development objectives for a new product. The circles in the Figure 1 illustrate the four main objectives for a product and the arrows indicate the trade-offs between these objectives[4]. Input from all organizational units, i.e. cross-functional collaboration, is required in order for a firm to be able to create a balance between the above-mentioned objectives. It is worth mentioning that increased competition has forced firms to challenge traditionally management theories, according to which efficiency and innovation are mutually exclusive issues and a firm can only be good in one of them at time [5].

In any event, the importance of cross-functional teams in the new product process has been documented and discussed widely [1]-[11]. Researchers have found that when firms utilize a cross-functional team, they increase the quality of the product [9], the success rate of the project [1], and they also improve the launch success of the new product [10].

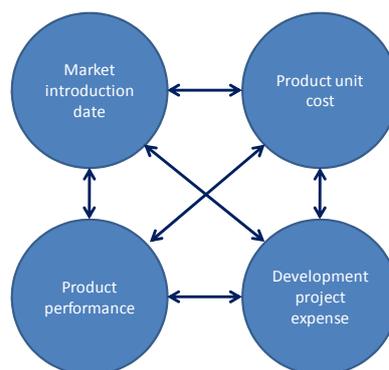


Fig.1: Objectives for new products[4]

However, it takes time, resources, and leadership skills to build consensus between different units because managers need to navigate between diverse opinions and objectives [9]. Most organizational and innovation-related issues typically occur at the interface between marketing and engineering, and this will be

⁺ Email: henri.simula@aalto.fi

discussed in the next chapter. Naturally, there are other functional interfaces, e.g. R&D vs. production [13], and industrial design vs. marketing [14], [15], which have their own issues.

3. Engineering – Marketing Interface

Various studies have focused on the interface between marketing and R&D/engineering (cf. [9], [16]-[26]). Managing that interface seems to play an important role in the success of new products [27]. According to, there is a clear requirement for close co-operation between the different departments in an organization that are pursuing innovation [28]. Similarly, it has been stated that, “from the perspective of the producer, marketing and engineering design ideally work together to achieve a common goal: creating the product with greatest value for the firm” [24, p. 58-59].

However, Song et al. point out that trying to involve all of the different departments in a company in a product development project can be counter-productive [9]. Instead, they suggest a function-specific integration based on stage requirements [9]. According to Gupta et al., the R&D vs. marketing integration interface has a strong positive relationship with innovation success [29]. Despite the importance of integration, adequately measuring the level of integration is still problematic. Gupta et al. suggest measuring it in terms of information sharing and R&D-marketing involvement within the different stages of the innovation process [29].

The key issue, however, is not only physical proximity and working together. Somewhat counterintuitively, there are also problems related to having too close of a relationship. Souder investigated situations where individuals from R&D and marketing were good friends [30]. That actually led to a situation where nobody wanted to hurt the feelings of others and both parties avoided conflicts and never challenged the other’s ideas and always took the other’s judgments for granted [30].

Over half of the 289 projects Souder studied experienced some problems with the R&D – marketing interface. The failure rate was significant in those situations in which there was some disharmony: a failure rate of 23% when there was mild disharmony and a failure rate of 68% when there was severe disharmony (ibid). The major challenge, as Griffin and Hauser point out, is to get people coming from different disciplines to understand the goals of others and to appreciate the viewpoints of others [19].

While the cross-functional approach can yield positive outcomes, different ways of thinking and cultural differences can also create challenges for marketing and R&D [19], [31]. Differences in perspectives regarding new ideas, products, and development tasks and roles may cause problems in communication and lead to a lack of customer understanding [31].

Souder points out that deep-seated attitudes can lead to disruptive situations, which often have negative outcomes [30]. He mentions that a lack of appreciation and distrust between parties cannot be easily overcome and disharmony creates real barriers between participants. According to Michalek et al., the measures of success and the objectives for products also vary according to the function [24]. Whereas marketing values dimensions such as market fit, customer satisfaction, market share and profit, positioning, and the right price tier, engineering, on the other hand, is concerned with technical objectives such as performance, reliability, cost reduction, durability, energy use, manufacturability, and innovativeness [25].

According to Littler, the role of marketing in the product innovation process is to ensure that the customer’s needs are taken into account throughout the process [32]. On the other hand, Workman describes a case study of a high-tech firm where marketing’s role was rather limited [33]. Marketing had no direct influence over new product decisions and the company culture was very much driven by the engineering department. Workman proposes that marketing has less power in situations where there is environmental uncertainty and also when products are highly modular or custom-built [33]. According to Michalek et al., marketing may have the viewpoint that “design constraints generally can be overcome by allocating appropriate funds [25]. In some cases they cannot” [25, p.59]. On the other, Michalek et al. also note that “the engineering design community must accept that price and consumer preferences are aspects of design just as real as those determined by physics” [25, p.59].

Souder lists antecedents that create problems and conflicts between R&D and Marketing [30]. These are, for instance, technical specialization, a different sense of time, different motives and goals, dissimilar jargon,

a bounded sense of responsibility, and a clique mentality [30]. While Griffin and Hauser acknowledge that these stereotypic roles do not apply to every firm, they still point out that there is a certain amount of generic truth behind the roles and list differences in the various dimensions, which are illustrated in table 1 below [19].

Table 1: Marketing - R&D interface differences[19].

<i>Dimension</i>	<i>Marketing</i>	<i>R&D</i>
Time orientation	Short	Long
Projects preferred	Incremental	Advanced
Ambiguity tolerance	High	Low
Departmental structure	Medium	Low
Bureaucratic orientation	More	Less
Orientation to others	Permissive	Permissive
Professional orientation	Market	Science
Professional orientation	Less	More

4. Associated Problems

The items listed in the table above are not issues that a firm can just ignore, because they may seriously impact a firm's level of performance. Crawford lists a series of outcomes resulting from discrepancies between R&D and marketing [17] (p.85): Products are late; The new items are more costly than predicted; The new products fail to sell, either because (1) they do not solve user problems well enough or because, (2) while they do so, they have other drawbacks that turn customers off; R&D and marketing blame each other for the misfires.

One important aspect to making the innovation process better is to overcome the language barriers between marketing and R&D via effective and ongoing communication [19], [22], [24]. Interpersonal trust and respect also influence the relationship between marketing and R&D [12], [25].

Lovelace, Shapiro, and Weingart found that while disagreement is evidently bound to happen in functionally diverse teams, the key thing is to harness this disagreement as a source for innovations and that increased performance lies in communication management and in finding ways to resolve conflicts in a collaborative manner [34]. Michalek et al. also emphasize the iterative nature of decision making, especially with products of a higher complexity [24]. There is also evidence that a high level of formalization in organizational structures can actually help the integration process. The reason being is that there are less conflicts and confusion of roles, resulting in efficient coordination between marketing and R&D [27].

A separate but related topic is illustrated by Jones and Stevens, who claim that NPD-related frameworks should take internal company politics into an account [35]. They postulate that NPD is an intrinsically political process and label it under the term micropolitics. It means that individuals have their own agendas, i.e. personal career interests, and status ambitions. While this conflict between individuals and the group is present in any organization, its effects have been left out in studies that focus on new product creation as consisting of a series of logical steps.

A recent study by Calantone and Rubera (2012) states that, though companies often focus on the issue of environmental uncertainty, it is not the only issue of importance; the nature of a company's innovation should be analyzed when determining the optimal level of collaboration activities [26]. They demonstrate that companies with aggressive innovation have also developed a deeper culture of collaboration between their RD&E and marketing units. It is also important for R&D to receive market feedback from marketing and also for marketing to create an understanding of the capabilities as well as limitations of R&D and how that know-how can be applied to new products [26].

5. Conceptual Framework

The conceptual framework in the Fig. 2 illustrates that successful collaboration between engineering and marketing can lead to improved business and new innovations. The antecedents for successful collaboration are shared goals and common language, clear roles and responsibilities and mutual trust between these units. These three dimensions are affected by the interface between engineering and marketing.

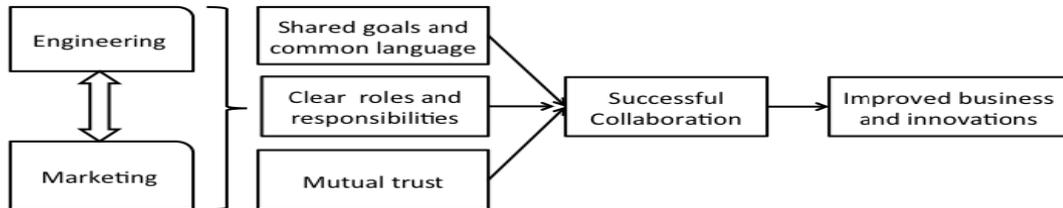


Fig 2: Conceptual framework for benefits of successful engineering – marketing interface

6. Conclusion

It is perhaps correct to posit that if individuals have the power to hinder the overall development, they also have opportunities to really influence the project's success. However, the problems are, after all, not specific to a single business unit. According to Wind, "there are only business problems, the solutions of which are facilitated by insights and knowledge from marketing, operations, finance, human resources and other disciplines" [36, p. 871]. In practice this means that constructive opportunities and the possibilities of an individual to influence the positive outcome of product initiatives exist. Sharing information between relevant parties and close cooperating between engineering and marketing units is encouraged in order to improve the innovation capabilities of firms.

7. References

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