Decision Making on Open Innovation Websites

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Abstract. Firms are increasingly organizing virtual new product development (NPD) initiatives to solicit ideas and suggestions from external parties such as customers. While virtual NPD provides firms with unprecedented access to external knowledge, the diversity of input and participants also poses challenges to decision making. This study develops the concept of decision openness and examines whether making decisions with respect to the opinion of external participants influences product sales growth over time. Decision openness in product development activities is distinguished from that in commercialization activities to examine their differential impacts.

Keywords. Decision making, open innovation, new product development

1. Introduction

Information technology (IT) has opened new frontiers for new product development (NPD) by providing firms direct access to external knowledge. For example, Starbucks Corporation initiated the “My Starbucks Idea” website to gather ideas for new products and services from both existing and potential customers. The initiative resulted in the launch of 277 new products and services over five years. Virtual NPD has also been used for more complex products. The Fiat Mio project developed a city car based on over 11,000 ideas and suggestions submitted by more than 17,000 participants from all over the world. The ideas and suggestions submitted dealt with marketing as well as technical aspects such as propulsion methods and navigational tools. Decisions for the final car were made with participants rather than solely by Fiat. Enabled by IT, this level of openness is in stark contrast to the traditional vehicle development process, which is dominated by automakers and involves only selected external parties. This openness provides firms with unprecedented access to the rich insights of existing and potential customers efficiently, but the diversity of input also changes the nature of decision making in NPD [1].

Since it is often infeasible to incorporate all suggestions into the final product, firms need to decide which idea to adopt and which to forgo. In the spirit of open innovation, many firms identify popular ideas by soliciting feedback from participants through voting and commenting. While some firms take on an open approach in decision making by adopting the most popular idea, others may choose not to incorporate the most favorite idea into the final product, due to considerations such as incompatibility with a firm’s existing products, services, image, and organizational capabilities [1]. There has been anecdotal evidence that participants of virtual NPD can develop negative feelings when they believe that their inputs are ignored and such feelings can propagate to other aspects of the firm. For example, a participant of Dell’s IdeaStorm posted:

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"Many individuals have lost interest in IdeaStorm lately because IdeaStorm, the way it stands now is, frankly, stagnant... I'm sure many individuals have lost interest in IdeaStorm in part because they're led to believe that their ideas are disregarded/ignored now..."

Another participant posted:

"Frankly, all of the ideas that ought to be implemented are already posted. All that's left is for them to be implemented, which I don't expect to happen. I'm seriously considering giving up on Dell."

Against this backdrop, this study develops the concept of decision openness in virtual NPD, defined as the extent to which key decisions in a virtual NPD are made with respect to the opinion of external participants. Decision openness is a concept that is unique to virtual NPD, since it arises from the fact that virtual NPD involves a large number of external participants much more extensively in the process of NPD compared to traditional NPD. It is fundamentally different from consensus in decision making among members in traditional NPD teams in that external participants in virtual NPD may well be customers influencing the sales of a product. This study will examine decision openness in product development and commercialization activities separately to identify their relative influence on the sales of the resultant product over time. Other than contributing to the theoretical development of open innovation, the findings are also expected to help firms fine tune the way ideas are selected in their virtual NPD initiatives.

2. Conceptual Background

This section first describes key activities in NPD. This is followed by a review of performance indicators in virtual NPD.

NPD is a complex endeavor involving a multitude of activities. Development activities seek to create product designs that are technically and economically feasible [2, 3]. It includes the design of both product form and function, which directly determine a product’s quality. External participants such as existing customers can potentially contribute to the design and prioritization of product features, specification of product interface requirements, and validation of product architectural choices [4]. Successful development activities result in a product that adequately addresses customer needs.

Commercialization activities focus on the marketing and selling of a product in terms of pricing, packaging, and promotion [5]. These activities seek to appeal to customers and entice them to make a purchase. Contemporary research and practice view marketing as economic and social interactions in which customers are active participants in relational exchanges rather than an operand resource that is acted on to generate sales (Vargo and Lusch 2004). It is clearly relevant to involve customers in product commercialization to understand their potential responses to different marketing elements and identify the optimal configuration [6].

This study examines decision openness of development activities and commercialization activities separately since they may differ for a single product. For example, a firm may adopt the most popular idea for product color (an aspect of product
form) but charge a slightly higher price (as aspect of commercialization) than that preferred by most participants to cover production costs. Studying them separately also provides a nuanced understanding of the relative effect of decision openness in different NPD activities.

The performance effect of opening up the innovation process to involve external participants has been an important topic of open innovation research. Focusing on firm-level effects, Laursen and Salter [7] found that open innovation improves innovative performance measured in terms of turnover pertaining to new and significantly improved products. A similar effect has been observed in subsequent studies [e.g., 8]. Project-level and product-level outcomes have also been studied. For example, Witell et al. [9] observed that involving customers in marketing activities improves the profits of new products and services. Gruner and Homburg [10] found that higher intensity of customer interaction in idea generation, product concept development, and market launch improves the financial success as well as quality of new products. Accordingly, this study measures NPD performance both qualitatively and quantitatively using product quality and product sales respectively.

In this study, decision openness is conceptualized at the NPD project level. Although it is possible to conceptualize openness at the firm level along with compatible NPD performance measures such as the number of new products and proportion of firm profit from new products, analyzing the phenomenon at the project/product level eliminates the need to assume that a firm adopts the same level of decision openness for all its NPD projects. Firms may well use different approaches to develop different products.

3. Theoretical Development

Decision openness refers to the extent to which key decisions in a virtual NPD are made with respect to the opinion of external participants. In product development activities, the key decisions relate to the form and function of a product. When these decisions are made in line with the preferences of the majority of participants, the resultant product is likely to be perceived as of high quality and meets the needs of a wider range of customers.

There may also be psychological reasons that decision openness in product development increases perceived product quality. Through increased influence on decisions, decision openness signals to participants that they are empowered, rather than just exploited, to influence product development in a virtual NPD initiative. In contrast, when their inputs are solicited but not acted upon, participants may feel alienated and develop negative sentiments towards the virtual NPD initiative as well as related entities such as the resultant product [1].

The procedural justice concept also offers a theoretical explanation for the effect of decision openness. When firms do not go with the majority when making decisions, the virtual NPD initiative can be viewed as unfair and lacking transparency in decision making. Recent studies have shown that procedural justice significantly influences individuals’ decision to participate in firms’ innovation [e.g., 11]. This suggests that those who do participate would expect procedural justice and they are likely to feel dissatisfied when the expectation is not met. There is also emerging evidence that customers who are empowered to select and design products show stronger demand for
the resultant products, even when they are identical to other products in objective terms [e.g., 12, 13]. However, prior studies have not distinguished between decision openness in product development and commercialization activities.

The distinction is interesting because most virtual NPD initiatives have opened up commercialization activities but not development activities, due to the belief that external participants may not have adequate technical knowledge and tools to contribute to development activities [14]. Making the distinction in this study can indicate whether it is beneficial to open up development activities more. Researchers also increasingly emphasize the need to conceptualize open innovation from the perspective of phases through which an innovation evolves from conceptualization to commercialization (Dahlander and Gann 2010). Specifically, product development activities differ from commercialization activities in that development activities are oriented towards producing high-quality product design while commercialization activities focus on improving sales. Therefore, this study hypothesizes that decision openness in product development influences product sales through affecting perceived product quality, while decision openness in commercialization activities influences product sales directly. This study examines sales longitudinally through initial sales and sales growth, which can indicate how a product had performed in the past as well as how it will perform in the future (Hultink and Robben 1995). This is one of the first attempts to examine the longitudinal effect of openness on virtual NPD performance.

**H1:** The effects of decision openness on initial product sales (H1a) and product sales growth (H1b) are mediated by perceived product quality.

Commercialization activities focus on the marketing of a product and involve the determination of pricing, packaging, and promotion strategies [5]. Decision openness is expected to improve product sales by ensuring that marketing strategies appeal to the majority of customers and entice them to make purchases:

**H2:** Decision openness of product commercialization is positively related to initial product sales (H2a) and product sales growth (H2b).

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**Figure 1. Decision Openness in Virtual NPD**

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4. Proposed Research Method and Preliminary Study

To test the hypotheses, data will be collected from more than 150 completed virtual NPD projects. A preliminary study is currently underway to test the research design as well as provide initial indication of the results. In the preliminary study, decision openness in product development is measured by the proportion of participants who had voted for the final product form and function. A high proportion indicates that the final decision is made with respect to the opinion of external participants. Decision openness in commercialization activities is measured by the proportion of participants who had voted for the final pricing, packaging (e.g., product name), and promotion (e.g., tagline) of a product. Perceived product quality is measured based on product reviews. To measure product sales growth, data on product sales over five months is collected.

Since the dependent variables of interest include product sales growth over time, latent growth modeling (LGM; McArdle and Epstein 1987) will be used to analyze the data. The data will be analyzed for the hypothesized relationships as well as the trajectory of growth in product sales in post-hoc analyses. The latter is expected to further reveal whether decision openness can influence the path of sales growth. Results of the preliminary study will be reported at the conference.

References


