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## **How does concept development contribute to successful launch?**

### **Exploring the role and the sources of Hard-to-Imitate Signals**

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#### **Abstract**

This paper explains why CD activities are valuable from a signaling perspective. By signaling, the firm attempts to influence the behavior of a customer. However, as most signals can be imitated or faked by competitors, a signal will only be effective from the firm's perspective if it is perceived as reliable by customers, which requires the signal to be costly or hard to imitate. This paper explains why repeated customer interaction during the CD phase can create new or significantly improved capabilities on the one hand, and create lead users on the other hand. The creation of new capabilities and lead users are two sources of Hard to Imitate Signals (HIS) which are perceived as reliable by

customers and thus contribute to innovation and market diffusion. The paper discusses some general implications of the signaling perspective for CD.

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### **ABSTRACT**

This paper explains why CD activities are valuable from a signaling perspective. By signaling, the firm attempts to influence the behavior of a customer. However, as most signals can be imitated or faked by competitors, a signal will only be effective from the firm's perspective if it is perceived as reliable by customers, which requires the signal to be costly or hard to imitate. This paper explains why repeated customer interaction during the CD phase can create new or significantly improved capabilities on the one hand, and create lead users on the other hand. The creation of new capabilities and lead users are two sources of Hard to Imitate Signals (HIS) which are perceived as reliable by customers and thus contribute to innovation and market diffusion. The paper discusses some general implications of the signaling perspective for CD.

**Keywords:** Innovation, Fuzzy front end, Business model, Signals, Capabilities, Lead users

## 1. INTRODUCTION

The innovation management and the new product development literature claims that innovation efforts should be moved to the fuzzy front end to avoid costly downstream mistakes and premature lock-in (Zhang and Doll, 2001; Kim and Wilemon, 2002; Reid and Brentani, 2004; Alam, 2006). Concept development (CD), which refers to the process of creating, evaluating and selecting concepts to be developed into new products or services, is way of achieving this. The aim of the concepts or descriptions for prospective products or services is to provide early market input (Acito and Hustad, 1981; Scheuing and Johnson, 1989; Page and Rosenbum, 1992; Urban and Hauser, 1993; Burchill and Fine, 1997).

There are times when firms spend a lot of time and effort on CD. Large firms may visit hundreds of customers, trying to understand and formulate customer problems before starting to create new concepts. Many successful firms spend a great deal of time listening to customers and discussing various customer problems that go beyond the firm's current focus. Is such "wastefulness" rational? And if it is, why are the CD activities important? The fuzzy front end literature argues that CD activities are valuable, given the importance of selecting the "right" concepts before dedicating too many resources to product and service development. However, the focus of those literature is on the firm's internal processes and the outcome in terms of tested concepts, which leaves the relation among customers, the innovation and the firm unexplained. By focusing on how suppliers and buyers make decisions and try to affect each other the signaling literature suggests there is another rationale (Kirmani and Rao, 2000), which the CD literature overlooks. Unfortunately, the innovation management literature does not deal with signals, but they have been studied in the contexts of information economics, evolutionary biology and psychology, and marketing (Spence, 1973; Stiglitz, 1975; Zahavi, 1975; Gerstner, 1985; Herbig and Milewicz, 1994; 1996; Maynard Smith and Harper, 1995; Saad, 2007; Miller, 2009).<sup>1</sup>

In a market, an innovation and subsequent transactions are characterized by varying degrees of information asymmetry. When the customer lacks the information of the supplier, they make inferences from signals relating to the supplier. On the other hand, this process should influence

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<sup>1</sup> E.g. living entities send signals of reproductive fitness, academic grades are considered signals for admission opportunities in institutions, an employee's professional experience sends signals to potential employers, and bank statements are used as signals by various financial institutions to establish the eligibility of an individual to receive a loan or credit.

the information the supplier chooses or attempts to provide, regardless of the quality of the supplier or its offer. The signaling perspective posits that rational buyers are aware of this and will therefore not trust all signals. However, buyers expect the firm to live up to its promises if it is costly or difficult for the firm to send a reliable signal on the one hand and costly for the firm to default on the other hand. The former demonstrates that the supplier has the ability to undertake difficult, time- or resource demanding tasks, while the latter constitutes a punishment which would greatly remove the incentive of exaggerations. This explains why hard to imitate signals (HIS) allow the buyer to differentiate product offers from suppliers in a situation characterized by information asymmetry and uncertainty (Spence, 1973, Kirmani and Rao, 2000).

Any actor sends and receives signals; thus customers signal to the firm, competitors and other organizations. These signals may deliberately or unwittingly affect the behavior of the firm. Consequently, we may infer from the signal literature that CD activities can be beneficial for the firm because they can send HIS during innovation and diffusion that affect decision external and internal to the firm.

However, presently, the signaling literature does not deal with innovative activities in general or fuzzy front activities in particular. Therefore, the research question is why CD activities can send hard to imitate signals, hence influence the behavior of potential customers on the one hand, and of the firm itself on the other hand? As CD activities may take place long before the launch of an innovation(s), these activities, in order to be valuable beyond the creation of the particular concepts per se, must create sources of HIS.

The signaling literature shows that the creation or the use of these sources is costly and carries high alternative costs. From an innovation perspective, this characteristic fits with the knowledge based view of the firm, which stresses the importance of the long term dedicated creation of idiosyncratic resources and capabilities that are unique to the firm (Kogut and Zander, 1992, 1996). However, to our knowledge there is no research showing what signals these capabilities and resources convey during and after launch, or what activities create capabilities and resources that make CD valuable from a signaling perspective.

The paper will show that CD activities create capabilities and resources that during launch positively influence the perceptions of potential customers about the firm's offer(s) and thus

contribute to the market success of the innovation. Our explanation relies on two important aspects of the CD process that are caused by repetitive customer interaction; creation of capabilities and a pool of potential lead users that remain valuable for the firm following innovation. Why these two are critical parts of the CD process can be explained by signal theory.

The paper is analyzing a multinational corporation active in mature products and markets. To differentiate its offers from competitors, the firm has added services and new product packages that complement the original product offers. As a consequence, the business model of the firm changes dramatically. The selection of the case was based on the firm's attempts to change its market position by instigating service dominated business logic that allows easier identification of the relation between CD activities and the creation of new resources and capabilities compared to incremental product innovation processes.

The paper is organized as follows. Section 2 provides an overview of the signaling literature as well as capability literature and user involvement. Section 3 presents the research approach and Section 4 presents the case. Section 5 identifies and explains the two sources of HIS in the case firm and Sections 6 is focused on some discussion points about HIS and concept development. Sections 7 offers conclusions and some research implications are presented in Section 8.

## **2. LITERATURE REVIEW**

### **2.1. Signaling**

For a firm to convince potential customers to make a purchase, it has to show that the products or services will be valuable given their cost. Since the precise nature of innovations in general and customer-specific services in particular is uncertain or at times unknowable for the customer, the purchase decision is not straightforward.

However, firms can demonstrate their ability and motivation to produce and deliver a product or service that will provide value for the customer, by signaling. Signaling is a ubiquitous phenomenon; signals convey messages concerning the quality, value or competitive intentions of a firm's products or services, that may be difficult or impossible for a receiver to directly or

explicitly observe or obtain within a reasonable time and resource frame.<sup>2</sup> A classic example of signaling is the use of academic titles by job seekers, to demonstrate their expertise to prospective employers (Spence, 1973). However, here signaling refers to the activities engaged by the firm in its attempts to convey information to customers beyond the particular product or service. Firms signal in myriad ways, for example, by demonstrating product compatibility tests during market launch, by providing warranties, and by prompt and effective responses to customer complaints (Grossman, 1981; Wiener, 1985; Kelley, 1988; Riley, 2001; Kim, 2002).<sup>3</sup> One particularly important type of signals from an innovation perspective is market signals, which can be classified as preannouncements of market actions or the market actions themselves (Porter, 1980). Table 1 presents a list of common signaling activities.

[Insert Table 1 about here]

Signals can be deceptive or delusive, some are warnings and some show honest commitment to a target audience (Porter, 1980). A prospective customer may perceive that these activities make it more likely that the purchase will be better or as good as alternatives if the signals ensure that the sender is motivated and confident about its ability and motivation to deliver a high quality product or service (Herbig and Milewicz, 1996). However, as most signals entail a low cost for the sender, which implies that firms can cheat; indeed, while senders with above average ability have an incentive to reveal their true ability, senders with a below average ability have an incentive not to disclose their lesser ability. Therefore, for a signal to be effective for the sender, it needs to be perceived as reliable by the receiver. Zahavi's (1975) paper explains that the honesty of a signal can be ensured by the *handicap principle*, which means that this implies cost or difficulty for the signaler so that less able senders are likely to lack the ability to signal as proficiently (or at all). This makes such signals hard to imitate for other firms.

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<sup>2</sup> Signals have been studied in the contexts of evolutionary biology and psychology, marketing and economics (Zahavi, 1975; Gerstner, 1985; Maynard Smith and Harper, 1995; Herbig and Milewicz, 1994; 1996; Stiglitz, 1975; Saad, 2007; Miller, 2009). E.g., living entities send signals their reproductive fitness, academic grades are considered signals for admission opportunities in institutions, an employee's professional experience sends signals to potential employers, and bank statements are used as signals by various financial institutions to establish the eligibility of an individual to receive a loan or credit.

<sup>3</sup> Product compatibility tests demonstrate compatibility and are not based only on the firm's claims. Warranties and prompt responses to customer complaints are useful because even if the quality of products or services is variable, a lower threshold quality would seem to be guaranteed.

The question is what constitutes a “handicap” that would create a HIS in a business context? It would include significant features such as observable expenditure of resources, time spent and care taken to demonstrate the firm’s ability and willingness to “waste” resources, which might differentiate its signals from those of imitators or competitors (Miller, 2009). Thus, according to signaling literature, it is the high costs of or difficulty involved in signaling that assures the value and reliability of the signal to the customer and makes the signal hard to imitate for competitors (e.g. Spence, 1973; Stiglitz, 1975; Zahavi, 1975; Riley, 2001). As a consequence, if the costs of the signal in terms of time, difficulty and use of resources, goes down, then the value of the signal reduces similarly (Zahavi and Zahavi, 1997).

In business, the cost or handicap need not arise at the moment of signaling; it might have been incurred in the past. In particular, repeated sequences of actions (routines) or repeated games, such as ongoing interactions among buyers and sellers, are ways used by signal senders (sellers) to demonstrate proficiency. These activities can be viewed as plausible indication of future good performance because they show the firm has performed similar tasks successfully in the past, which is likely not the result of chance, but a greater skill and capability which makes it sensible to regard the firm to be able to undertake certain activities over time. It is obviously difficult for competitors to imitate these signals at least in the short run since dedicated work is technically challenging and necessarily involves time before a competitor performs repeated tasks. Such a view is not merely commonsensical; indeed the evolutionary literature explains and demonstrates empirically that meticulous recursive practice in technological development or scientific progress (Vincenti, 1990; Constant, 2000) leads to more reliable knowledge or capabilities (Campbell, 1974; Constant, 2000).

The effectiveness of signals depends on the receiver’s ability to interpret them, which in turn is dependent on the social meaning and interpretation of the signals, the prior knowledge and experience of the receivers, and the number of signals received (Herbig and Milewicz, 1994; Khaire and Wadhvani, 2010). This means that receivers may interpret signals differently (Spence, 1973) and as customers learn the value of signals changes for the transmitting firm.

## **2.2. Capabilities**

Capabilities provide firm with specific advantages (Black & Boal, 1994). According to the capability view the firm consists of systemic interactions among resources, which allow the firm

to perform different activities effectively (Kogut & Zander, 1992; Nahapiet & Ghoshal, 1998). Capabilities are based on individually distributed knowledge, including the knowledge of customer needs, which is recombined and integrated by routines. The capability literature primarily has a firm-centric view, largely ignoring the role of customers. However, the ability of a firm to create and capture value is determined not just by the capabilities necessary to undertake productive activities but also by the capabilities the firm requires to interact with its customers, suppliers and other external actors. While the former type of capabilities is usually denoted direct or core capabilities, the second type of capabilities is denoted indirect or ancillary capabilities (Langlois and Robertson, 1995; Loasby, 1998). Obviously, effective problem formulation and solving is a HIS, which shows capabilities can be sources for HIS. By drawing on the signal literature, the following can be inferred concerning the role of capabilities as HIS sources: First, the literature states that capabilities of the firm evolve only gradually over time. The set of capabilities within the firm at any moment are influenced by past choices. Therefore, a firm's activities, including signaling impose a boundary on what the firm's internal repertoire is likely to be in the future. The leverage of capabilities mainly occurs across time, by repetition, in which the execution of activities within the firm becomes highly effective. The evolutionary literature explains and demonstrates empirically that such meticulous recursive practice leads to more reliable knowledge or capabilities (Campbell, 1974; Vincenti, 1990; Constant, 2000). Leverage may also occur within related and coherent diversification in which capabilities can be redeployed within similar activities (Helfat & Raubitschek, 2000). From the perspective of this paper, repetitive, time consuming, meticulous and sometimes wasteful activities that create more reliable knowledge or capabilities are important because they may create the capabilities that are sources of HIS.

Second, as firm capabilities are organizationally embedded, they are locally dependent and cannot rapidly be imitated or diffuse outside the special context in which they have evolved. Thus, if customers perceive or infer that a firm has a certain ability or track record; it is likely that firms will possess that ability differentially, making it a source of HIS. However, this interpretation will critically depend on the time, knowledge and motivation of the customer to comprehend the signal and whether or not the signal is honest.

### **2.3 User involvement**

Recently the innovation management literature is challenging the traditional new product and service development models in which the company is solely creating the new product/ service idea as well as selecting the ideas that are going to be marketed. Instead, customers are portrayed as active by creating ideas for new product/ service or selecting their preferred design to be produced (Fuchs and Schreier, 2011). This implies firms need to become more customer-oriented at times by engaging customers in the innovation process (Gruner and Homburg, 2000; Alam and Perry, 2002).

Ways for orchestrating radical changes in firm's offers by engaging customers include developing early stage innovative activities, such as CD (Page and Rosenbaum, 1992; Kim and Wilemon, 2002; Liu and Bligh, 2003; Alam, 2006). CD identifies and formulates customer requirements, creates a set of concepts and selects the most relevant one(s) to suit the requirements of potential customers (Acito and Hustad, 1981; Burchill and Fine, 1997; Liu and Bligh, 2003). The intensity of customer interaction is greatest in the idea generation and concept development phase of new product/ service development. At the same time, interaction during prototype testing has the largest effect of all stages on the new product/ service success (Gruner and Homburg, 2000).

According to customer active paradigm (CAP) the first step in being innovative is to create ideas, which subsequently include developing product or service prototypes (von Hippel, 1978). The literature stresses that certain characteristics for pro-active users are common for users (von Hippel, 1986). Lead users are a minority of users who have greater needs and discern them ahead of the majority of users but their needs are generally relevant for a future market. Lead users are actively searching for solutions to their problems (Bogers et al., 2010; Morrison et al., 2004). Recently, CAP includes an interacting perspective suggesting co-creation of innovations by the company and users. Empirical studies show interaction with customers having lead user characteristics has positive impact on product and service success (Gruner and Homburg, 2000).

The marketing literature indicates that having pro-active users can be a HIS, in that their activities and motivation signal to other users the relevance of the products or services (Miller 2009). This type of HIS arises out of conspicuous reputation, which refers to the statements or views expressed by others than the firm.

The potentially long time before launch, and the relative small amount of involved customers indicate that this signal commonly is weak during CD. However, the interaction with customers can transform the users from 'being out there' to being active continuously signaling to other potential customers post innovation. This means users that took part in the CD phase become a part of the firm's resources (Priem, 2007) and as such they can be a source of HIS.

### **3. METHOD**

The empirical section includes two longitudinal case studies performed in two business units - Personal Care and Tissue – of Svenska Cellulosa Aktiebolaget (SCA), a Swedish multinational corporation. The main case was a CD project as collaboration between Tissue and personal care. The project has been followed for two years by performing semi-structured interviews. The first round of interviews took place during 2010 during concept generation phase and each interview lasted for around an hour. The interviews were followed up later during 2012 and were complemented by ongoing informal discussions with two senior managers, including the concept development project leader.

The Personal Care study was done earlier and the aim was to investigate the implementation of a new business model after adding services to old products. The study was relied on semi-structured interviews as well as setting up and participating in workshops as a participant observer. Some inputs from the personal care study have been used as a complement to the CD case.

The CD case was chosen because it was aimed to radically change the market positioning and the business model of Tissue from selling products to selling bundles of products and services. This change required new activities, capabilities and resources that would be convincing for customers. To do so, Tissue was to draw on the capabilities and resources of Personal Care that during the last ten years had been undergoing such a change.

The radical nature of the cases does not limit the transferability of the study findings since capabilities and resources in principle can be created in any CD process. However, we would argue that the importance of capability and resource creation is relatively stronger in this case, which means the implications of the study need to be interpreted with care.

Because the nature of the innovation was not clear at the time of initial study, we analyzed the role and nature of the services of the Personal Care business unit, which was experienced in

developing and selling services. One of the authors was involved in setting up and running workshops to formulate and analyze the main problems and suggest possible solutions for implementing services, related especially to interactions with customers. Five two-day workshops, covering more than twenty European countries, were held over a period of two years.

#### **4. CASE STUDY**

The motivation for the CD project was that Tissue, a business unit of SCA had found it increasingly difficult to differentiate its offers against those of competitors based solely on product features. Nursing homes were an important target group for Tissue and managers argued that a new business opportunity for Tissue would be to sell bundled services and products to nursing homes rather than just products. Such a change would allow Tissue to differentiate their offers compared to competitors. Since offering services was new for Tissue, the intention was to draw on the long experience in Personal Care, another SCA business unit, with a long history of selling services to its target group (nursing homes). The two business-units started to collaborate to evaluate the feasibility of a market position innovation where the customers change the view of the firm's offers. To do this Tissue initiated a CD project to understand and identify customer problems and respond to the needs of nursing homes by creating and selecting service and product concepts.

Thus the CD was the starting point in a potentially radical reorientation of the business logic of the Tissue, wherein value for customers would be created by the offer of combinations of products and services, rather than just products. The CD process was conducted in three major phases (see Figure 1).

[Insert Figure 1 about here]

These steps in the CD process are typical of the main steps in most CD processes according to the literature (Burchill and Fine, 1997; Liu and Bligh, 2003). The first step involved sending company experts to interact with targeted customers. The company's aim was to understand the customer environment so that the context and customer problems could be translated into customer requirements and used to generate the basic concepts. During this phase the company sought out potential customers to observe and interact with, in order to obtain a good understanding of customer needs, identify current problems and communicate future plans.

Interviewees repeatedly stated they had undertaken a lot of market research and had gathered information from customers around Europe through numerous visits to try to get a better understanding of customers' problems. For example, the project leader said:

*Recently it has been more difficult to rely on product differentiation. So we are trying to base our innovative efforts on customer insights [...] we look more into achieving a learning experience together with our customers to know their demands more clearly and working on how to improve the offerings further.*

Many nursing homes in Europe were visited. The company employed observations, interviews and listening to customers to obtain a comprehensive image of the problems customers experience, the products and services they used, how the offerings in a particular market segment might be improved and how new customer segments could be created. According to the interviewees, in this stage, loyalty to the brand and the quality of existing offers and after-sales support had a positive effect on customers' willingness to participate. Some customers were keener to participate because they were aware that they had some problems and welcomed the company for solving such problems.

Interviewees mentioned that although in the business to business market most customers have similar needs and problems, interaction with as many customers as possible may seem wasteful but is beneficial since these customers could be potential users for future company offers.

Based on the information gathered about customers' problems and needs, the company tried to frame ideas as solutions and to generate concepts in collaboration with potential users. To synthesize the results of the customer visits, the company held an internal workshop. Brainstorming among project team members identified several new business opportunities. It was decided to involve an external nurse in the workshops to represent the customer.

Following the workshop, further information was collected on the various opportunities and their business viability, and requirements were discussed regardless of the company's current capabilities to develop and exploit these opportunities. The business opportunities identified were clustered into a number of specific areas and another workshop was held to identify concepts for each of these opportunity areas. Several concrete concepts were identified in the workshop. The potential product or service requirements were derived from interaction with customers. In this

stage, the company's available technical and resource capabilities were scrutinized to see whether and how the company could support the proposed innovations. The concepts were intended to result in diversified product and service offerings that would respond to customer demands while being compatible with the company's existing offers.

The CD project led to the creation of a number of hygiene solutions (concepts). The company choose to continue collaborating with 7 nursing homes in Sweden and Finland. The Swedish private sector nursing homes were chosen because of their interests in improving hygiene and prior project participations with the company. In Finland, the company started negotiating with nursing homes where some declined to participate. Among those that agreed to be a part of the project four were chosen, all from the public sector. Two nurses were brought in by Tissue to start to work closely with nursing homes in Sweden and Finland. The aim was to evaluate the usefulness of designed concepts for resolving customer problems. One of the main differences between the two countries was that in Finland the nursing homes were not previous users of company's products. Therefore one challenge for evaluating the concepts in Finland has been that nursing homes were thinking of the project more as a product-testing project because the products were also new to them and their impression of the concepts were not based on service logic. A specific topic that became clear is that the institutional and competitive situation varies between countries. The Finnish customers were used to be given (some) services for free, while the Swedish setting allows for selling services.<sup>4</sup> Thus, the company needs to decide whether they are to charge the customers for the services directly or to sell the products together with services and charge for only the products?

Another difference is that in Finland since the nursing homew were from the public sector, almost all the cleaning work is done by cleaners and not nurses. Therefore, nurses and cleaners are two different roles with different hierarchical positions that are working closely with hygiene. Therefore the company had to also consider the knowledge level of nurses vs. cleaners and according to that arrange different education programs for them. In sweden this is not the case and almot all the hygiene work is performed by nurses.

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<sup>4</sup> This issue has been brought up in one of the negotiations with nursing homes where they asked about the difference in SCA's education program (and other services) from the offers of other hygiene agencies where they actually charge them for nothing.

Concepts were modified and customized taking account of additional customer requirements. The continuous evaluation and collecting further inputs from customers is now finished with the 7 nursing homes and the company will decide internally the “best” concepts for further developments. For the steering group one important aspect for strategic decision making is to customize tools, education, and support country by country and in each country specific hygiene rules and regulations must be considered (e.g. In Finland, they can go deeper in terms of hygiene because the country is more supporting hygiene activities). However the elements of the offer remain the same but each customer at each country can choose different combination of products and services.

## **5. ANALYSIS**

Throughout the CD process the company sent different signals to potential customers (see Table 2). These signals were based on the firm’s activities (or its resources). However, there are many issues that prevent the signals from becoming valuable for the firm; the firm’s poor understanding of customers and their problems meaning the customers are not convinced, the firm’s signals are not distinguishable from the signals of imitators or competitors, or signals that reach a small number of potential customers constraining their potential pecuniary impact (Herbig and Milewicz, 1994; Khaire and Wadhvani, 2010). This section discusses these problems and proposes ways to circumvent them that are specific to CD activities.

Table 2, column 2 shows some of the signaling activities identified by the case study. However, most are not HIS because they are neither costly nor difficult to send. Therefore, Table 2 also shows two major sources of HIS: a) creation of capabilities by observing and interacting with customers, and b) creation of users, including early adopters and lead users. While these sources in principle can be created at any stage, they were developed mainly during the first two stages of the CD process. We discuss these sources of HIS in turn.

[Insert Table 2 about here]

### **5.1. Capability creation through observing and interacting with customers**

What is the role of CD in signaling, during innovation and market diffusion? Since it is often difficult to show or demonstrate concepts in detail, *customer interaction* is very important where, according to Table 1, repeated visits to customers demonstrate commitment to innovation and

responsiveness to the views and the activities of customers. The company had valuable inputs from the personal care project on implementing service logic, both internal to the firm, and external towards customers. Learnings around diversifying the business logic have been diffused from the personal care business unit to the tissue unit which can be considered as one type of capability in this study. This is in line with the literature that show that interaction with customers during new service development is important in that it can affect sales performance and project efficiency (Alam and Perry, 2002; Magnusson et al., 2003; Alam, 2006; Melton and Hartline, 2010).

The previous section discussed that while the firm interacted with customers, they repeated these activities in a similar manner. Evolutionary studies stress (e.g. Vincenti, 1990) this enables the creation of knowledge and capabilities. In the context of this study, it means that sources of HIS can be created in this phase through *repeated* interaction with customers. Poor understanding and knowledge of customers and their needs makes it difficult in the innovation process to interpret what customers are saying, especially if these customers are not completely aware of what they need. Thus, innovation launch may fail due to a lack of capabilities to interact with customers, and to formulate and resolve their problems. One of the main learnings from the project in this regard has been that having good customer relationships makes the development of such projects much easier. The company has taken different approaches for mitigating such issues with interaction; taking the service logic in the CD project and co-development of services together with the customers, using representatives with appropriate skills and knowledge, and differentiating users (e.g. different approaches towards managers, nurses and cleaners). To gain a broad understanding on customers internal to the firm, the firm used experts from several different fields, including marketing, sales, engineering and nursing. Using skilled nurses earlier during internal workshops and later as commercial sales representatives adds to the capability of the firm for interacting with customers. Nevertheless, it is necessary to listen to what customers say in order fully to understand customers' activities and needs, which requires learning how to formulate customer problems. Given the novelty of this work, none of the experts managed to fulfill this requirement completely.

For multinational corporations, experts are often regional although some may be sent abroad. Firm representatives need to observe customer behavior to better understand their activities and

problems, they need to interview various types of customers, and set up and run focus groups. In this case also representatives for Sweden and Finland were natives of each country who were more familiar with hygiene rules and regulation in their own countries.

From the perspective of CD, this extended interaction with customers could be seen as superfluous, wasteful and time-consuming. However, the (primarily) tacit knowledge gleaned via the CD translates into a valuable firm capability during innovation launch and later phases of the CD process.

According to the interviewees, changing the behavior in an organization is a time consuming process which is a reason for investing during the fuzzy front end phases in R&D so that the company can “buy” enough time for developing its ideas together with customers. This means the CD is an evolutionary process in which a concept is not designed, but rather is created through a process of trial and error that includes a great deal of repetition and reuse of knowledge with some adaptation, often based on users’ feedback.

The indirect outcome of this process is that firm develops the capability to interact constructively with customers, which can become a source of HIS. The range of HIS that can be sent varies on a case by case basis but showing responsiveness and being able to discuss the usefulness of various solutions to customer problems are likely always to be important. The interaction between the company’s skilled staff and customers increases credibility and acts as a covert signal, augmenting existing capabilities and resources. The wastefulness of the activities in this context can be explained as being part of the nature of the evolutionary process; they may be inefficient but they are effective in the long run.

## **5.2. Creation of lead users or early adopters**

CD identifies and formulates customer requirements, creates a set of concepts and selects the most relevant one(s) to suit the requirements of potential customers (Acito and Hustad, 1981; Burchill and Fine, 1997; Liu and Bligh, 2003). Although the company may interact with and visit many potential customers during the CD project, the firm rarely communicates with a majority of future users. This is problematic since favorable impressions will not “travel” directly from CD to the launch of the new offer unless potential customers have been a part of the CD project. However, interaction with selected customers can have indirect effects as some are or may

become *early adopters or lead users* who may signal the attractiveness of the offers to other actors.

One of the problems related to signaling is that any firm can claim to be able and motivated to do something similar. What a firm says rarely constitute a HIS: unless these claims are protected, they can be made by any firm. Another way to create HIS is to have others signal as “what others say and do” can constitute a HIS. This means that HIS can come from having others do the signaling for the firm. Thus, if a company identifies and interacts with customers who are or could become future users, they can become a source of HIS. Thus, interacting with the pool of users that may become signalers to future potential customers alleviates the problem of two few receivers of the signal or “signaling through the wrong sender”, which occurs if the user does not trust the company and its reputation (Herbig and Milewicz 1994, 1996; Rao and Ruckert, 1994; Erdem and Swait, 1998). Once lead users are identified or “created”, their participation in the ideation, design and selection of concepts can increase the probability of a successful product//service package launch.

Among the customers with whom firms realistically can interact (Khaire and Wadhvani, 2010) many may not be able to formulate a solution to their problems, hence they are less able to get involved in generation of ideas problems and they eagerly want them to be solved (Morrison et al., 2004; Bogers et al., 2010).

By involving users and demonstrating potential value of future offers and the ability of the firm to create solutions that solve their problems, such users start to signal. The lead user literature so far has focused on the role of users as innovators, and the positive effects of firms involving users in designing technology-based services and in new product development (von Hippel, 1986; Magnusson, 2003; Morrison et al., 2004; Bogers et al., 2010). However, in the context of this paper, users could be a larger pool of users including both the users with innovative ideas and early adopters who can also become a valuable resource for the firm by signaling to other actors, especially other potential customers.

Searching for or creating lead users can be categorized as another representation of precision in terms of time (repetition). Users that receive signals of commitment from the company (through the creation of concepts and solutions that fulfill their needs), will influence others, speed up

diffusion, and become first adopters in the future (Morrison et al., 2004). This is based on the logic that repeated use of a set of activities or resources stabilizes the intended signal (competence and new product and service usefulness), making it hard to imitate by indirectly affecting potential customers' selection. The role of users as future signalers however is not evident in this project due to the fact that concepts are yet to be launched. This role can however be supported network externalities, including informational increasing returns. The potential for this is found in the case in that nursing homes are in ongoing contact with each other. For example, in the Finnish public sector, persons with hygiene responsibilities have contacts in public sectors with hygiene nurses. In Sweden, companies may own several nursing homes and these homes may follow one another and gets updated on each other's initiatives.

In summary different capabilities and resources (in form of lead users) that are considered as a source of HIS throughout the project, are presented in a timeline in Figure 2. Explanations for different parts of the figure are provided in Table 3.

[Insert Figure 2 about here]

[Insert Table 3 about here]

## **6. HIS AND CONCEPT DEVELOPMENT**

Previously the paper identified the creation of capabilities and the activities of potential users as two sources of HIS that were created during the CD phase. The new developed concepts are service oriented which means that the newly created capabilities are related to the firm's ability to interact with their customers in their language, understand their situation and being able to intervene in their processes to formulate and solve their problems. More precisely, according to Table 1, the dominant signals that the firm would send are credibility, commitment and reputation. Between the CD project and the launch, the signaling of this capability lies dormant but it can be exploited as soon by the firm. At the same time, the potential customers and various user groups can signal to other users. Prior to launch this signal is quite weak but the potential is there.

The two sources of HIS, capability (Alam and Perry, 2002; Magnusson et al., 2003; Alam, 2006; Melton and Hartline, 2010), and lead users (von Hippel, 1986; Magnusson, 2003; Morrison et al., 2004; Bogers et al., 2010) identified in this case have been studied in depth in the literature. However, as far as we are aware, they have not been analyzed from a signaling perspective during the innovation process.

[Insert Figure 3 about here]

Each of these sources is based on the activities of conspicuous precision, in the form of the carefully repeating similar tasks to increase the ability to carefully create and integrate new varieties of products and services to be offered to customers. One interviewee who was a member of the CD project team said that:

*“To be in the concept phase is not that money intensive, it is more the research that we invest in... to do the research in the right way and to know what we are aiming for and to communicate it with our customers takes a very long time”.*

The case study suggests that CD projects can lead to reputation, including conspicuous reputation where the value of the offers is demonstrated by others. The basis for this is prior conspicuously precise activities. However, while reputation can be anchored in users and customers, it seems that CD project per se is unlikely to create solid reputation. Instead we argue this reputation is concentrated on the latter stages of the innovation process, especially post launch. Thus, CD activities may to some extent lead to (conspicuous) reputation, but do not seem directly to contribute to them.

The identified sources of HIS hold promise of future offers for a set of customers, demonstrating that the firm “cares”, expends effort on tailoring sets of flexible solutions, is committed to the new business area, will continue in the long term. We interpret these as time-dependent versions of Zahavi’s (1975) handicap principle, in the sense that the alternative costs and sunk costs are high although they may not threaten the continuing existence of the firm.

According to the handicap principle, the effectiveness of HIS will decrease if the pecuniary and non-pecuniary costs decrease. This has some important general implications; first, if the capability to interact with the customers spills over to competitors, the firm will lose its

competitive edge vis-à-vis competitors since it will no longer have any HIS. For services this arguably matters most in the pre-sales phase.

Second, the potential market segment and the preferences of the lead users in that segment will be less valuable if other companies can create users or if they can be “exploited” by other firms, for example by stating there are many potential suppliers for a specific offer.

## **7. CONCLUSIONS**

This paper explained how CD activities contribute to successful innovation launch by emphasizing the creation of capabilities and resources that become sources of HIS.

The paper started by asking why many companies waste so many resources during CD, beyond what would seem necessary to create and select concepts. We explained that concept development activities per se are valuable because they signal to potential customers that the firm will be motivated and able to offer high quality products and services in the future. To explain this, the paper analyzed how CD activities can create capabilities and resources that become sources for sending HIS to other prospective customers. The advantage of HIS is that because they are costly and time-consuming to create, they provide great benefit for early movers compared to competitors and may be crucial for creating markets and increasing customer confidence in the new solutions.

We identified two major sources of HIS. First capabilities are created through interaction between company representatives and potential customers which allows observation and understanding of their problems and needs. This interaction needs to be continuous and to involve a wide range of customers, allowing for the formulation of a broad set of customer problems. User interaction is a recursive practice that creates knowledge about customers and new firm capabilities. The created capabilities become the source of HIS because the interaction between firm and customer is improved and problems can be formulated, evaluated and addressed more effectively during market diffusion. For services, the proof of the pudding is in the eating and the ability to interact with customers in a professional manner, will give the firm advantage over other less able companies.

Second, the CD project created potential users, based especially on customer interaction. Many participating customers have early adopter or lead user characteristics. This suggests they will be important in providing useful knowledge for the firm, in terms, for instance, of evaluating and selecting the “right” concepts, products or services. They also may signal to other future customers. For both of these reasons, the creation of lead users should lead to the generation of valuable resources for the firm (c.f. Priem, 2007). The creation of users is a source of HIS because other customers hear about real user experience rather than the claims made by the firm. Lead users were crucial in our study for convincing other potential customers and shifting the company’s focus.

Both these sources are based on customer interaction which might be expected given the nature of the CD project, which involved a firm shifting from being product-centered towards being more service-centered. Inherent in this was the effort to change market position in terms of how customers perceived the firm’s offers.

## **8. IMPLICATIONS AND FUTURE RESEARCH**

The main message for managers is that the signal perspective plus the case suggest that firms could and at times should invest in fuzzy front end activities and in R&D upfront and one way to do that via a CD project. The paper opens up a new research approach relating a firm’s innovative activities, capabilities and resources by drawing on the signaling theory. Additionally, the paper contributes to the concept development and innovation management literature by showing how capabilities and lead user can be created during the fuzzy front end of product/service development, making the launch of new innovations more likely to be successful.

We suggest that creation of sources of HIS may be very important for changing a firm’s business model. More research is needed on how users’ wants and preferences may force companies to change their business models and how firms convince potential customers about the value of new business models.

Although the study in this paper is conceptual, it is supported by case study illustrating how CD activities can create capabilities and resources that enable firms to send HIS, which can convince customers of the advantages of choosing the company and its offer rather than an alternative. However, the role and the importance of these findings need to be demonstrated empirically. In

particular, given the selection of our case study, the importance and the ability of the firm to create HIS during CD might be overstated compared to more incremental CD projects. The reason why the created capabilities and resources were so clearly identifiable is because the firm changed its market position through a radical new CD project. Nonetheless, we would suggest that the sources of HIS identified here could be created in other CD projects but are more significant in CDs contributing to the position innovation. Finally, we suggest that the logic of precise and repeated activities as sources of HIS can be found in other fuzzy front end processes than concept development, and especially in customer interaction intensive activities.

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**TABLE 1: Signaling and intended signals<sup>5</sup>**

<b>Signal activities</b>	<b>Signals</b>
Advertising	Quality
Setting and selling at a high price	Quality
Creating and maintaining a brand name (e.g. green brand)	Reputation, credibility, social responsiveness, clarity and consistency.
Creating and maintaining brand alliances	Reputation
Creating and maintaining product / service compatibility(umbrella branding)	Quality and credibility
Guaranteeing product/ service warranty	Quality (reliability).
Retaliation, harsh price reduction and customer interaction	Hostility, consequences, and commitment
Financial announcements	Reputation
New product/service preannouncement, differentiating and diversifying offers	Commitment, credibility and reputation

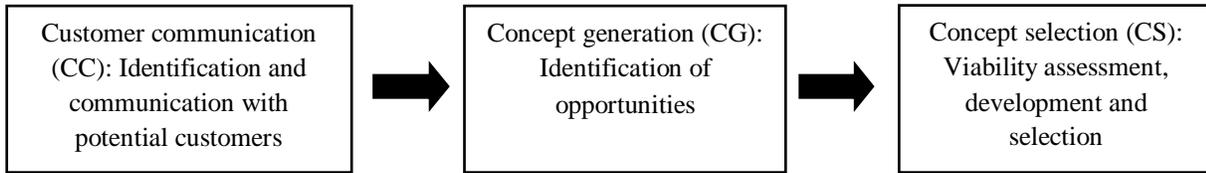
**TABLE 2: Signals, activities, and HISs in CD**

<b>CD process</b>	<b>CD activities: signaling</b>	<b>Signals</b>	<b>Sources of Hard to Imitate signaling</b>	<b>Hard to Imitate Signals</b>
Identification and communication with potential customers	Creating brand alliance	Reputation	1) Capability creation through customer interactions	Credibility
	Customer interaction	Credibility		Commitment /
	New product	Quality		responsiveness
Identification of opportunities and concept generation	preannouncement		2) Search for and creation of lead users	New product or service
	Creating and maintaining product / service compatibility			usefulness

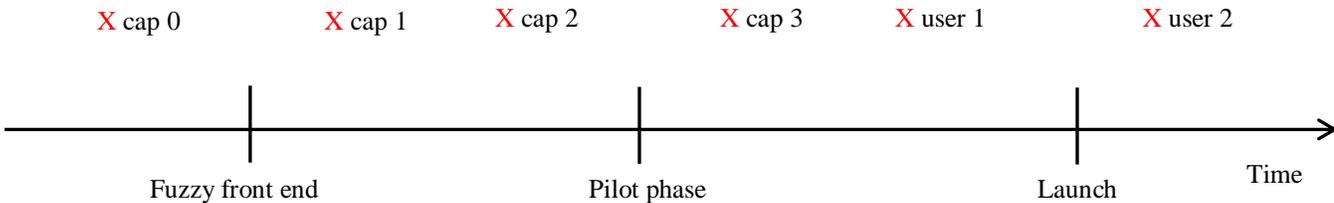
<sup>5</sup> Each of the activities has been extracted from different literature; Advertising from Nelson (1974), Kihlstrom and Riordan (1984), Milgrom and Roberts (1986), and Kirmani and Wright (1989); Setting and selling at a high price from Gerstner (1985), Tellis and Wernerfelt (1987), Bagwell and Riordan (1991), Caves and Greene (1996), Kirmani and Rao (2000); Creating and maintaining brand name from Rao and Ruekert (1994), Kotler (1997), Erdem and Swait (1998), Herbig and Milewicz (1996); Brand alliance from Rao and Ruekert (1994), Rao, Qu, and Ruekert (1999); Creating product/service compatibility from Katz and Shapiro (1985), Kim (2002); Guaranteeing warranty from Grossman (1981), Wiener (1985), Kelley (1988), Boulding and Kirmani (1993); Retaliation, price reduction and customer interactions from Hauser and Shugan (1983), Heil and Walters (1993); Financial announcements from Fombrun and Shanley (1990), Rindova et al. (2005); New product preannouncement from Heil and Robertson (1991), Herbig and O'Hara (1998), Su and Rao (2010).

**TABLE 3: Capability creation during the concept development phase**

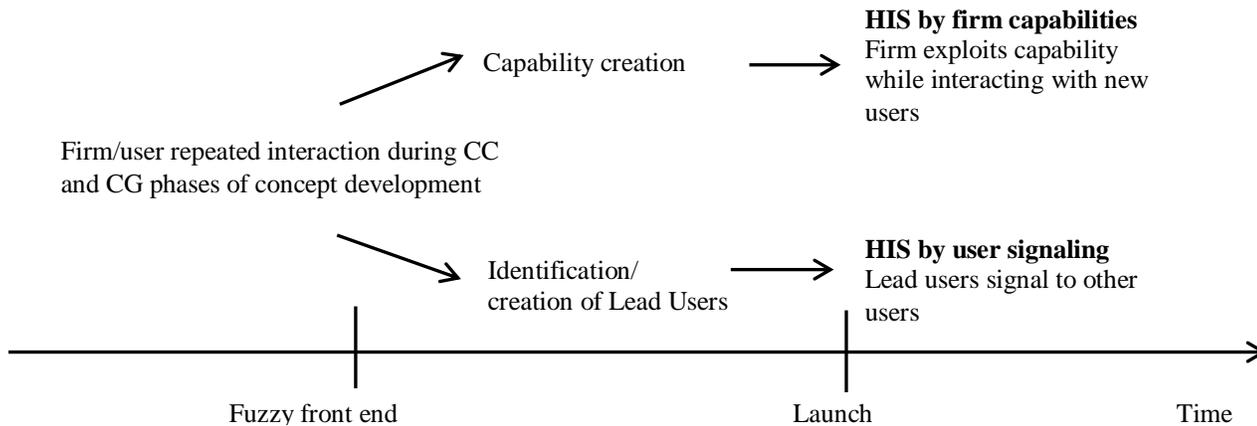
Cap 0	Diffusion of BM: service-oriented logic
Cap 1	Bringing in experts from marketing and sales, as experts in service related projects
Cap2	Bringing in nurses during internal workshops
Cap3	Using nurses as company representatives during customer visits
User 1	Differentiating users during concept evaluation phases (managers vs. nurses vs. cleaners )
User 2	User- user interaction and creating users as future signalers



**FIGURE 1: CD process of the case**



**FIGURE 2: Capabilities and resources created during different phases**



**FIGURE 3: Sources of HIS created by repeated firm/ user interaction during CD**