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**CHANGING THE BUSINESS MODEL TO
OVERCOME INNOVATION ADOPTION BARRIERS:
THE CASE OF NEW VALUE DISTRIBUTION IN THE CUSTOMER'S ORGANIZATION**

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ABSTRACT

This paper explores some of the challenges a firm encounters when launching a discontinuous innovation which creates new economic value that is distributed in a different way within the customer's organization. This is done by conducting an in-depth case study of the development and eventually successful commercialization of a new incontinence product. It can be seen in this study that even though the innovation created an increased economic value for the customers, the product did not take off initially. The main reason for this was that the new economic value was distributed over many different actors within the customer's organization. The individual purchaser was not assigned to take the total cost of incontinence care into consideration. Since the product reduced the total cost significantly but was more expensive, a discrepancy occurred between where the value was created and how it used to be appropriated. The article also looks at how this innovation adoption barrier can be circumvented and underlines the importance of business model innovation in order to do so. In this case study, the firm extended its value proposition and focused on the total cost for the customer's organization rather than the product costs. One major step in this direction was the launch of a service organization which took a systemic approach to the customer's needs, while at the same time actively educating the market. Moreover, the incentive structure of the sales organization was changed in order to encourage the sales of the new product. In conclusion, this paper argues that the heterogeneity of interests within a customer's organization has not been sufficiently captured by previous literature about discontinuous innovation. Rather than viewing customers as distinct actors with one specific utility function, customers may be regarded as a collection of actors who sometimes have diverging interests. By doing so, some potential barriers to successful commercialization of innovations which are sold to organizations can be revealed.

Keywords: Discontinuous innovation, technology, appropriation, distribution, heterogeneity

1. INTRODUCTION

It is well documented that established firms encounter difficulties when trying to develop discontinuous innovations. Incumbents are usually good at incremental innovation, but when technologies or business models change, new markets emerge or the regulatory frameworks of an industry are altered, they find it hard to adapt to these shifts.

There are many explanations of such incumbent failure. More recent literature on this subject draws upon value networks and resource dependency theory (Pfeffer and Salancik, 1978) in order to understand why established firms encounter problems when facing discontinuous innovation (e.g. Christensen and Rosenbloom, 1995). Christensen (1997) argues that those technologies which do not fit into the current value network of an incumbent will not be developed. Established firms are thus “held captive” by their most profitable customers and therefore find it hard to develop innovations which are not addressing the needs explicated within a certain value network.

However, many discontinuous innovations satisfy current customers, but do so by creating value that is differently distributed in the customer’s organization. Much of the literature about discontinuous innovation regards the customer as one distinct actor, rather than as an organization which comprises several heterogeneous interests. Such a simplification may in some cases conceal the challenges which are related to successful commercialization, especially when an innovation is sold to industrial customers, where it may create new economic value on many levels in an organization.

The purpose of this article is to explore some of the challenges a firm encounters when introducing an innovation which creates new economic value that is distributed differently within the customer’s organization, and to investigate how these problems can be handled. This is done by conducting an in-depth case study of the commercialization of an innovation which generated a new distribution of economic value.

The remainder of this paper is organized as follows. The next section reviews literature on discontinuous innovation and value networks. The subsequent section contains a description of the methods used in this paper. Then the case study is presented in order to illustrate the particular challenges encountered and how they were handled, whereas the following part analyzes these results. The final section contains a discussion of the case study and some concluding remarks.

2. RECEIVED THEORY

A discontinuous innovation can be defined as a major change, related to either a technology or a business model (Veryzer, 1998). Discontinuities arise from shifts along technological, market, political and other frontiers and they demand new or at least significantly adapted approaches to their effective management (Phillips et al., 2004). The business model can be regarded as a construct which describes the value a firm offers to customers, the architecture of the firm, its network of partners, and its way of creating, marketing and delivering this value (Osterwalder and Pigneur, 2003). A growing body of literature has explored the area of business model innovation in detail (e.g. Markides, 1997, 1998; Charitou, 2001; Gilbert and Bower, 2002). A business model innovation can be defined as a reformulation of what an existing product or service is and how it is provided to the customer (Markides, 2006).

Established firms are usually highly competent at the “steady state” or incremental innovation. But when technologies shift, new business models are introduced or new markets emerge, they can suddenly become highly vulnerable (Chesbrough, 2003). Frequently, incumbent firms do not manage these changes; they lose market shares and the successful firms are found among the entrants (Utterback and Kim, 1986; Christensen and Rosenbloom, 1994). Many scholars have tried to explain what is sometimes referred to as “the incumbent’s curse” (Chandy and Tellis 2000; Foster, 1986; Cooper and Schendel, 1976). Tushman and Anderson (1986) wrote about competence-enhancing and competence-destroying innovations. They argued that innovations which require the destruction of a firm’s existing competencies are very difficult to manage, because established firms are bound by traditions, sunk costs and internal political constraints.

Christensen (1997) brought an intriguingly different perspective upon this issue by drawing upon the concept of value networks (Christensen and Rosenbloom, 1995) and resource dependency theory (Pfeffer and Salancik, 1978). This theory suggests that a firm’s freedom of action is in fact controlled by actors outside the boundaries of the company, e.g. customers and investors. Since the customers and owners are the key stakeholders that provide the firm with resources, they also impose a great indirect control on what decisions are taken and how resources are allocated. Christensen explained the pattern of incumbent failure by making a distinction between sustaining and disrupting technologies. Sustaining technologies have in common that they improve the performance of established products along the dimensions that mainstream customers value. Disruptive technologies, on the other hand, initially underperform along these dimensions. The lower traditional performance and the higher ancillary performance create a large market uncertainty around the disruptive innovation. At the same time the established firm finds it irrational to abandon its current, profitable customers in order to aim for a new, initially small market and an inferior technology. As the performance of the disruptive innovation increases, it begins to attract customers from the sustaining technology and eventually displaces the old technology. Hence, incumbent firms encounter problems when a technology prospers in a new value network since they are “held captive” by their most profitable customers and therefore the winners are found among the entrant firms. Consequently, a key determinant of the probability of success for an innovation is the extent that it addresses the needs of actors in an incumbent firm’s current value network.

Thus, the literature regarding discontinuous innovation has shifted over time, from looking primarily inside the firm (e.g. Tushman and Anderson, 1986) towards addressing the value network of the firm (Christensen, 1997). This article differs from both these approaches by instead looking inside the customer’s organization in order to understand the difficulties related to discontinuous innovation. Previous literature has contributed to an increased understanding of the challenges related to discontinuous innovation and how they can be managed. However, it has primarily regarded customers as single entities in the value network, with one specific interest, rather than as an organization which comprises several actors with dispersed utility functions. Many innovations are developed for industrial customers rather than individual consumers and hence, innovations are often sold to organizations which can be regarded as value networks of their own. By downplaying the heterogeneity of interests within the customer’s organization, some of the difficulties and solutions related to succeeding with discontinuous innovation may be overlooked, in particular when innovations are sold to industrial customers.

One situation where a simplification of the customer's interests may be misleading is when an innovation creates new value which is distributed in a different way within the customer's organization and consequently makes it difficult for the innovator to appropriate the returns by using its established business model. Some scholars have underlined that value creation is distinct from appropriation of economic value (Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002) and that a discrepancy between them may create barriers to successful innovation. This particular aspect can be explored further by drawing upon the literature about value networks and looking at value which is differently distributed within the customer's organization. In that sense, our approach differs from the one employed by Chesbrough and Rosenbloom (2002), who look at value creation and appropriation when it is spread among different firms. In this article we will instead explore what challenges a firm encounters when launching a discontinuous innovation that creates new value which is distributed differently within a customer's organization.

3. METHOD AND RESEARCH SETTING

This paper is based upon an exploratory single case study, which examines how the studied firm developed, launched and eventually succeeded with such an innovation.

The present authors maintain a formal research partnership with the studied firm and have been interacting with it continuously during the last year. This relationship enabled extensive access both to databases and to key employees. People who have been involved in both the technological and commercial development of the product were interviewed. The interviews were semi-structured, asking the respondents to describe the development of the product, in what respects it was discontinuous, what the main difficulties were, and why the product could eventually be turned into a commercial success. Follow-up interviews were also performed in order to ensure accurate interpretation of the gathered information. All interviews were recorded, transcribed and listened to afterwards.

In order to obtain a contextual understanding of the company and its innovation activities, scorecards have also been sent out regarding the creative climate at the company and the innovative capabilities of the firm. In total, more than 150 people answered these scorecards, giving a total response rate of more than 70 percent. This was done within the scope of an innovation audit that was performed at the firm. During the audit, interviews were conducted with top and middle management. Moreover, detailed case studies of nine discontinuous innovation projects at the firm have been performed within the scope of the research which this paper is based upon. These data should be regarded as important background knowledge for the study described here.

Single case studies impose constraints upon the generalizability of the findings (Eisenhardt, 1989). However, as the work presented here is of an exploratory character, describing and seeking to understand what difficulties a firm encounters when launching a discontinuous innovation which creates new economic value that is distributed differently and how these challenges were handled, this method is deemed to be the most suitable one. Thus, the article does not attempt to provide an exhaustive set of answers, but outlines some of the key challenges and how they can be handled.

4. CASE DESCRIPTION

The studied product innovation is a diaper for adults, intended to take care of heavy incontinence among elderly people. It was first launched in 2001 and then re-launched in 2002. The technical development started ten years earlier within a concept development project. Initially, the scope was more open, with the purpose of generating new knowledge rather than aiming for a new product. This development eventually resulted in an ambition to launch a new incontinence product, which would be based upon a belt, instead of having a pant diaper or using tape when attaching it. There were several technological challenges in the project. A belt had to be developed, and by that time belts were rarely used in incontinence products. Moreover, both the absorption core and the shell of the diaper had to be improved.

The first attempt to commercialize the innovation took place in 1994. New machines were built and this was done at the same time as the product was developed due to strong pressure from management. Eventually this development turned out to be very expensive and it increased the complexity of the project significantly. Therefore the project was put on hold for some years, but since the firm's products for heavy incontinence became increasingly subject to price competition, the firm decided to restart the development activities in the late 1990s and thereby replace the 'all-in-one' diaper the firm had been selling previously. *"There was a strong commitment from an early point; management really believed that new products had to be developed in order to survive in the long term"*, one project manager recalls. This time the technological ambitions were lowered. Instead of using a belt, it was decided that the product should be attached with tape, since this would be cheaper. When the product was launched in 2001 it turned out that this tape made the product too stiff and very uncomfortable to wear. Therefore it had to be withdrawn from the market and the brand was severely damaged.

However, management still believed in the product and therefore decided to improve the belt and re-launch it in 2002. Once the product had been put on the market again, the sales did not take off, for several reasons. The new design made the product appear inferior, though it was in fact much better, both in terms of absorption capacity and in terms of convenience for the users. More importantly, the price was higher, and thus it was difficult for the sales organization to justify to the purchasers at retirement homes why they should buy the product. Previously, the firm had mainly offered products which could last longer, thereby lowering the customer's expenses. Though the new product resulted in an improvement along this performance dimension, the main difference was that it enabled cost reductions by decreasing the total cost of incontinence care. The "consequence costs" in terms of unnecessary product consumption, extra work, laundry and skin treatments could be reduced significantly. Up to 10 percent of the total cost could be removed, and since the cost of incontinence products only summed to 1 percent of the total incontinence care cost, this reduction was indeed remarkable and would easily justify a higher price. The main reason for this reduced incontinence care cost was that problems with skin irritation and leakages could be decreased. This improvement was primarily related to the breathable back sheet which enabled air to circulate instead of having the fluid circulating. The back sheet thus helped to maintain a healthier skin while at the same time increasing the comfort.

Hence, the new product resulted in fewer pad changes, less leakage and skin breakdowns, and this led to a significant reduction of the total incontinence care cost. But since the purchasers at retirement homes were not assigned to handle the total cost

of incontinence care but only the costs of incontinence products, they had in fact low incentives to buy this innovation, despite its superior performance. Moreover, the sales organization preferred to sell the old products since they did not know how to justify the higher price. Thus, the incentives both to buy and to sell the product were initially very low. It also proved difficult for the caregivers to understand how the product should be used. The innovation was easier and more convenient to put on, but how to do so was not obvious, and therefore the product was not really appreciated by the caregivers either, despite being more ergonomic when used correctly.

To sum up, even though the innovation offered increased convenience both for users of the product and for the caregivers, while at the same time creating significant cost reductions for retirement homes, the product was about to become a failure. *“We underestimated the barriers to success and therefore the product was initially a commercial failure”*, one engineer recalls.

However, the firm still believed in the innovation since it clearly created an increased economic value for the customer. Therefore the company started to look for new ways of selling it, by focusing on different attributes and sales channels. One major step in this direction was the launch of a service organization which aimed to take a broader perspective on sales, focusing on total incontinence care rather than just selling products. This can be illustrated by the motto of the organization, which is *“better care at a lower total cost”*. The new unit sought to communicate these values by performing studies together with customers, which showed the superior performance of the innovation. In one study together with six Danish municipalities it was proven that the customer’s total cost for products could be reduced by 22 percent and that leakages could be reduced from 25 percent to 10.6 percent. In another study, they focused on the total cost of incontinence management, illustrating that it could be reduced by 13 percent. Moreover, by using simulations, the service organization showed the customers how the “hidden” costs of incontinence in terms of leakages, the required time for pad changes, and skin breakdowns could be reduced significantly.

Apart from focusing on new performance attributes, the firm started to work actively with educating caregivers regarding how to use the product. The innovation manager says that *“it was not really intuitive how the product should be put on, but once we showed the caregivers how it is done they found it to be much more convenient than to use the old products”*.

The service organization also performed a study together with Linköping University, where they could show that the innovation was in fact much more ergonomic for the caregivers. This was an entirely new performance attribute for an incontinence product that the firm was scarcely aware of when the product was first launched, even though this had been a focus area in the development ten years earlier. This implied that the costs related to employee absence due to illness could be reduced, thus lowering the total cost of incontinence care even further. Once these studies had been performed, the sales force felt more confident selling the product. Furthermore, the incentives of the sales organization were changed so that the employees received their annual bonus based upon how much they sold of the new product. The sales channel was also shifted towards the management of retirement homes, since they could focus on total incontinence care costs rather than solely the costs for the products. By using advanced statistics and computer simulations, and extending the value proposition, it was proven that the innovation decreased the total cost of incontinence care

significantly, and this argument turned out to be more appealing to the managers than to the purchasers.

After these measures, sales eventually started to take off and have been growing rapidly during recent years. The innovation manager summarized the story by saying that “*the product would not have become a commercial success if a service organization had not been initiated and the sales approach had not been changed.*” Moreover, top management had been firmly committed and was not reluctant about cannibalizing upon previous products, primarily because the profitability was much higher.

5. ANALYSIS

As can be seen in the case study above, the innovation did not become a commercial success initially, despite creating a lot of economic value for the customers. One important explanation for this seems to be that the appropriation of economic value is distinct from the creation of it (Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002). The product created economic value which was distributed in a different way than previous products had done. The increased value was distributed over the end-users in terms of convenience and reduced skin irritation, the caregivers because the product was much more ergonomic, and the retirement homes by offering a significant cost reduction for total incontinence care. However, the individual purchaser was not assigned to take this value creation into consideration, and this created an adoption barrier. This observation suggests that it may sometimes be misleading to view customers as single entities with only one aggregated utility function, rather than as a collection of individual actors with distinct and sometimes conflicting interests. The case study above shows that a customer can indeed contain many diverging utility functions, and that this needs to be considered as a particular adoption barrier when introducing some innovations. Thus, if customers are viewed as one homogeneous entity, some of the specific challenges and barriers to adoption may be concealed. As firms are to a larger extent drawing upon external sources in order to innovate and become more interconnected (Chesbrough, 2003), the difficulties described above have probably increased.

This finding has further implications for models of diffusion and adoption of innovations. Such models often regard adopters as single entities with a homogeneous utility function. The diffusion model stipulated by Rogers (1995) is one of the more widely acknowledged ones. It focuses on relative advantage, complexity, compatibility, trialability and observability. The case study in this paper suggests that while such models highlight many of the important aspects of innovation diffusion, they may hamper the understanding of how and why some product innovations succeed if they do not address the heterogeneity of interests within a customer’s organization. Whether an innovation is successfully diffused or not seems to depend partly upon where it creates value in the customer’s organization and to what extent the current business model is aligned with this value creation or not. This finding is partly in line with Leonard-Barton (1990) who emphasized that misalignments between an innovation and an adopting organization will require changes in the innovation or the organization in order to be diffused successfully.

Some of the literature which may enhance the understanding of this issue can be found in the field of supply chain management. Supply chains extend across several

functions in many firms, and thus aligning the incentives of these actors becomes crucial in order to succeed in the implementation of major changes (Narayanan and Raman, 2004; Lee, 2004). Though this literature looks at the flow of goods, it seems to be useful also when studying the diffusion of innovations, mainly since it takes a systemic approach by looking at value chains and assumes that a firm can only impose direct control over one entity in this system. The same assumption seems to be valid when firms are increasingly interconnected in their innovation processes. In the same way as firms must acknowledge that incentive misalignments exist in supply chains and that this may create a barrier to change (Narayanan and Raman, 2004), they also need to recognize that such misalignments may result in a blockage to successful diffusion of innovations. This finding has implications regarding the challenges highlighted by Geoffrey Moore's book *Crossing the Chasm* (2002). A particular issue in order to overcome the chasm and reach the early and late majorities of adopters with a new product, seems to be related to aligning the business model with where the creation of value occurs within the customer's organization. How, then, were these challenges handled in the case study described in this paper?

5.1 OVERCOMING THE INNOVATION ADOPTION BARRIER

The studied innovation eventually became a success primarily because several changes were made in the business model. According to Chesbrough and Rosenbloom (2002), firms should focus on the demands of users or customers and how to appropriate the value generated by satisfying those needs. Consequently, when new value is created and distributed in a different way, the way of appropriating this value has to be aligned with this shift. Given that the product created value for the customer's organization on a systemic level, rather than on the level of the individual purchaser, the firm had to extend its value proposition in order to make it appealing for the retirement homes, as well as shifting the sales channel. This was done by initiating a service organization, which focused on the total cost of incontinence care, thus targeting the retirement homes on a systemic level. This is illustrated by the fact that the service organization's motto is "*better care at a lower total cost*". By gathering information and statistics which proved that the innovation indeed lowered the total cost of incontinence care, the performance dimensions were aligned towards the customer on a systemic level. Thus, the marketing activities related to the product focused on making the total costs of incontinence care visible, and thereby explicating the economic value that was created. By taking these measures and approaching the managers rather than the individual purchasers, the firm sought to develop a mutual understanding of the costs for incontinence care and thereby make the innovation more appealing.

The case study also illustrates the importance of aligning incentive structures within the sales organization in order to succeed with a discontinuous innovation. Educating the caregivers concerning how the product should be used also seems to have contributed significantly to the eventual success of the product. Many of these observations underline the importance of double-loop learning (Argyris and Schön, 1978) when introducing innovations that create new economic value which is distributed differently. Given that a firm can only control a limited part of its supply chain, it becomes crucial to identify the blocking mechanisms which it can remove and succeed in doing so.

The findings above also offer an interesting explanation for why manufacturing firms are increasingly moving from providing products to offering

integrated solutions (Slywotzky 1996; Olivia and Kallenberg 2003; Davies, 2003). Services are often integrated into the value propositions of established firms (Wise, 1999; Davies, 2004). One reason for this, we suggest, is that providing services seems to be important in order to succeed with innovations which create value that is distributed in a different way. By starting a service organization and extending the value proposition, the firm could appropriate some of the new economic value that was created by the innovation. Moreover, integrating products and services seemed to be very important in order to educate the customers regarding how the new product should be used.

6. DISCUSSION

The case description above also sheds some new light on the applicability of the terms disruptive and sustaining innovation. It can be seen here that whether the studied product should be classified as a sustaining or a disruptive innovation actually depends on who is approached within the customer's organization. The main reason for this is that the product created new value that was distributed differently. For the retirement homes as an organization, the innovation would be regarded as sustaining since it offered increased performance along dimensions that the organization has historically valued, namely a reduced total cost for incontinence care.

For the individual purchaser, on the other hand, the product would be regarded as a disruptive innovation. It offered a worse performance in terms of what the purchaser demanded, in this case a low price. At the same time, the innovation possessed ancillary performance attributes that the individual purchaser did not value, such as being more ergonomic for the caregivers, more convenient for its users, and creating a reduction of total incontinence care cost for the organization. But the purchaser was not assigned to reduce the total cost of incontinence care, nor to take convenience for caregivers and end-users into consideration. Thus, this new distribution of economic value implied that the innovation should be considered as disruptive for this actor.

The term "disruptiveness" can therefore be regarded as relative, since the findings in this article indicate that it seems to depend upon who within the customer's organization is approached with an innovation. The main reason why the literature on disruptive innovation has not suggested so is that it regards customers as distinct entities rather than collections of actors with utility functions that sometimes diverge. As can be seen in the case study above, such a simplification would have concealed some of the critical adoption barriers in order to succeed with a product innovation.

6.1 CONCLUDING REMARKS

This article has explored some of the challenges a firm may encounter when launching a discontinuous innovation which creates new economic value that is differently distributed within the customer's organization, as well as investigating how these issues can be managed. Previous literature has looked both inside incumbents in order to understand the challenges related to discontinuous innovation (e.g. Tushman and Anderson, 1986) and outside the boundaries of the firm (e.g. Christensen, 1997). This paper has taken a different approach and looked inside the customer's organization, illustrating how this perspective can help to identify some important challenges related

to succeeding with discontinuous innovation. In the case study above, the discrepancy between where the value was created and how it used to be appropriated was identified as a particular innovation adoption barrier.

This finding indicates that the literature on discontinuous innovation ought to take the heterogeneous interests in an industrial customer's organization into consideration when addressing the challenges related to the commercialization of discontinuous innovations. By regarding the customer as a collection of actors with several, sometimes diverging utility functions rather than as one single actor, barriers to innovation adoption can be identified. The article therefore suggests that the concept of value networks ought to be extended into also looking at different actors inside the customer's organization.

The paper has also given some suggestions regarding how these challenges can be managed. In particular, it has underlined the importance of changing the business model in order to overcome these barriers to innovation adoption. In the case study above, this was done by extending the value proposition and changing the sales channel. Moreover, the marketing of the product focused on new performance attributes, the incentives of the sales organization were changed, and a service organization was initiated in order to focus on the total costs for the customer's organization, while at the same time educating the customer regarding how the new product should be used.

The findings in this paper indicate that products which create new value throughout entire supply chains may be even more problematic to commercialize. When more actors with diverging internal interests are affected by the introduction of an innovation, the challenges are likely to become even greater. Moving further into those issues may be fruitful for future research regarding discontinuous innovation.

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