

## **THE RELATIVITY OF DISRUPTION: E-BANKING AS A SUSTAINING INNOVATION IN THE BANKING INDUSTRY**

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### **ABSTRACT**

Clayton Christensen's Disruptive Innovation Theory (DIT) is one of the most renowned frameworks in strategic management. One important question discussed in the context of this theory is whether the Internet and also the business models of pure e-banks constitute a disruptive innovation to the retail banking industry. The objective of this paper is to address this question by conceptually analyzing the case of Nordea Bank (Scandinavia), an incumbent that has over the last decade enjoyed extraordinary success in e-banking. The paper first demonstrates how the Internet has been a sustaining innovation at Nordea and then concludes that pure e-banks are unlikely to create a disruptive innovation in the retail banking industry.

Keywords: Disruptive innovation, sustaining innovation, technology-based innovation, E-banking, Strategy

### **1. Introduction**

Clayton Christensen's Disruptive Innovation Theory (DIT) is one of the most influential theories in the recent academic and management literature. This is reflected not only in his bestselling books "The Innovator's Dilemma" and "The Innovator's Solution", but also in the discussion and follow-up work that his theory created among academics and managers alike.

Christensen suggests a broad definition of the concept of innovation. To him, innovation refers to all changes of "processes by which an organization transforms labor, capital, materials and information into products or services of greater value" [Christensen 1997/2002]. Thus, in addition to creating new processes and products, innovation also includes new types of business models.

The DIT recognizes two types of innovation: on the one hand, sustaining innovations generate growth by offering a better performance in existing markets. Usually, regardless of whether they are incremental or radical, these innovations are exploited successfully by the established players in an industry and do not lead to revolutionary changes in an industry's landscape.

On the other hand, compared to existing products and business models, disruptive innovations initially have a lower performance in the traditionally most important performance criterion (such as functionality, speed, or size). Even though, in most cases, disruptive innovations are less complex from a technological viewpoint, they are usually brought to the markets successfully by new entrants. Christensen posits that this is due to the behaviour that incumbents and new entrants typically display. Managers in incumbent firms are unwilling to support disruptive innovations because: (1) they usually do not fulfil the needs of the firm's existing and most profitable customers and (2) they offer a much lower profit margin than sustaining innovations do.

As Christensen points out throughout his publications, it is not always easy to apply the categories of disruptive and sustaining innovation in practice: "Even people who deeply understood the theories [of disruptive innovation] struggled to use them in a repeatable and methodical fashion" [Christensen et al. 2004]. One reason for these difficulties is the fact that "disruption is a relative term" [Christensen and Raynor 2003]. This means that even though a particular innovation is disruptive to one player in an industry it might be sustaining to another. This implies that firms have to be careful when categorizing innovations, particularly if most companies and the public opinion consider an innovation to be of disruptive nature. For example, throughout the second half of the 1990s, the Internet was believed to be a disruptive innovation to almost all industries while in reality, it turned out to be of sustaining nature in many industries. There, the Internet had a sustaining impact in that it strengthened the position of the established market leaders.

Particularly, in the area of electronic retail banking there has been an ongoing dispute among academics regarding the disruptive nature of the new business models based on the Internet. In their book “The innovator’s solution”, Christensen and Raynor state that “Internet banking can only be deployed as a sustaining technology relative to the business model of retail banks” [Christensen and Raynor 2003]. Their underlying argument is that it is difficult to “create a business model that would afford disruptive online bank attractive profits at the discount prices required to win business at the low end [of the market]”. This view was supported by the failure of numerous pure online ventures such as Bank One’s online subsidiary Wingspan during the collapse of the online e-business bubble in 2001 which put the previous academic research [Li 2001, Useem 1999] regarding the disruptiveness of e-banking into severe doubt.

However, more recently, there have again been numerous authors who claim that Internet-based Banking might be a disruptive innovation in retail banking after all. Research conducted by Frei, Campbell and Hitt [Campbell and Frei 2004, Campbell 2003, Hitt and Frei 2002] points in this direction, implying that it is possible to develop a viable disruptive e-business model in retail banking. Gary (2004) discusses the case of ING Direct that displays characteristics of a low-end disruption because of cost advantages vis-à-vis physical retail outlets. Other scholars [e.g., Boss et. al. 2000] conclude that the failures of pure online ventures were rather consequences of inadequate strategic implementation of an otherwise promising business model. Thus, at this point in time, the question regarding the disruptiveness of E-banking in the retail banking industry remains open—and along with it its future competitive landscape.

The objective of this paper is to address this question by conceptually analyzing the case of Nordea Bank (Scandinavia), an incumbent that has over the last decade enjoyed extraordinary success in e-banking. Nordea presents an interesting real-world example because it is an important bricks-and-mortar bank in the Scandinavian region while it is also considered to be one of the most important e-banks in the world [Echikson 2001].

The research employed is a case design [Yin 1984, Eisenhardt 1989, Carlile and Christensen 2005] where the primary unit of analysis was the online organization of Nordea, the largest Scandinavian bank, which is described in more detail in later sections. The time frame of the analysis spans from the inception of computer-based banking services at Nordea in the early 1980s until 2004. We chose Nordea as a case example because the bank’s online operations are highly successful and because the bank has maintained an integrated approach to its online and offline banking operations since it started out. Data for the case study was collected through an extensive personal interview with the head of e-banking at Nordea Bo Harald and telephone interviews with his management staff. These conversations were followed up by e-mail exchanges to collect quantitative data from the internal accounting systems.

This paper is structured as follows. Section 2 provides an overview of the disruptive innovation theory (DIT) and highlights the five strategic dimensions that are associated with it. Section 3 introduces the case of Nordea and describes the e-banking activities of this bank. Section 4 analyzes these activities along the five strategic dimensions of the DIT and addresses the question of whether the Internet has been a sustaining innovation at Nordea. Section 5 summarizes the keys findings of this paper.

## 2. The Disruptive Innovation Theory

Before discussing in more detail the case example of Nordea, this section provides an initial overview of the disruptive innovation theory. The fundamental assumption of DIT is that in most cases, technological progress evolves faster than customers’ demand for better performance. This means that technologies that do not fulfil during their early development stages customer’s performance requirements continue to evolve and, at one point in time, overshoot the performance that customers can absorb (see Figure 1).

To illustrate this type of evolution, let us consider for example the PC industry. During the 1980s, desktop PCs were not good enough for many business applications. As a result, private and corporate users frequently upgraded their PC equipment and, in order to succeed, PC manufacturers had to provide higher performance. Nowadays, however, the PC processing power and functionalities have improved beyond the point where most users could utilize them. Using the DIT terminology, PC customers have become *overserved*.

The driving force behind the above development is called *Resource Dependence*.<sup>1</sup> Its theory states that it is actually customers and investors – not managers – who control the allocation of resources in an enterprise. It is so because companies that invest in projects that do not satisfy the needs of their best customers and do not suit the risk structure of their investors over the long run will not receive the necessary funding. This is also due to the fact that companies generally generate most of their profits with their most demanding customers who are willing to pay

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<sup>1</sup> The theory of Resource Dependence was developed by Pfeffer and Salancik [1978]. See also Bower [1970], p. 254 and Christensen [1997/2002], p. xxiii.

premium prices for more sophisticated products. At the same time, profit margins with customers in lower segments are generally much lower. Consequently, innovation efforts tend to revolve around the improvement of products in the high end.

In Christensen's terminology, *sustaining innovations* are those innovations that help established companies to generate higher margins by selling better products to the most demanding customers. Sustaining innovations can both be incremental or radical. While incumbents are not always first to develop a sustaining innovation, they generally succeed in their large-scale commercialization. This is due to the fact that compared to their start-up competitors, incumbents tend to have more financial resources, dispose of a larger customer base and have the processes in place to push the innovation into the market.

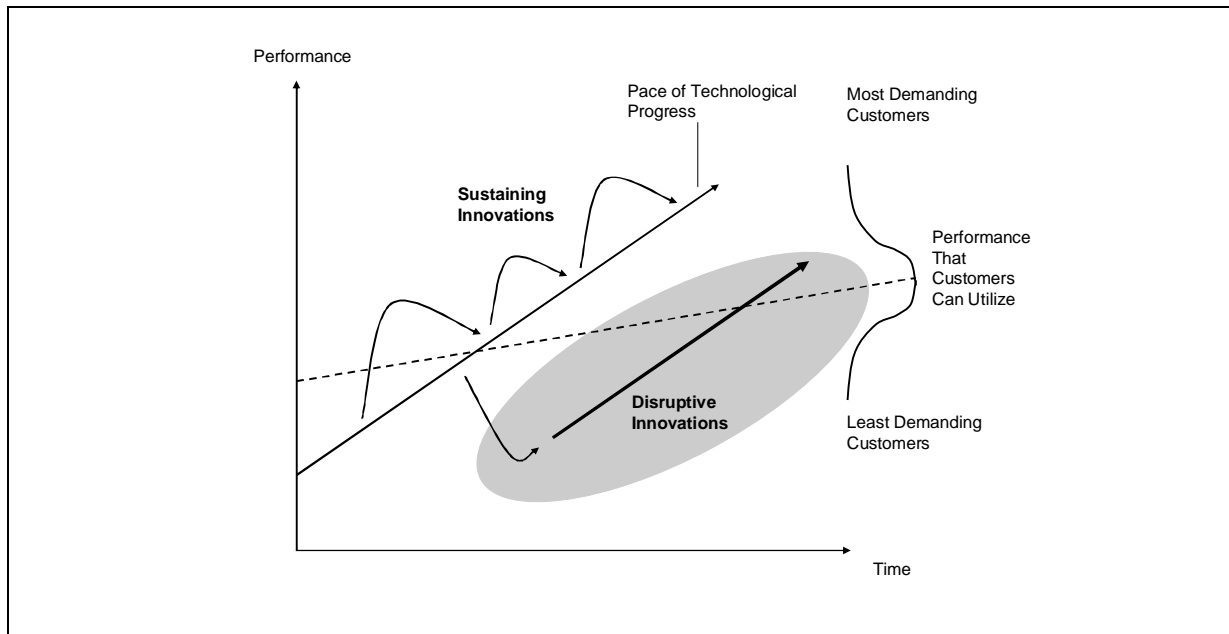


Figure 1: Disruption diagram

In contrast to sustaining innovations, *disruptive innovations* originate in segments that are unattractive for the incumbents; i.e., customers with the lowest demands. The key characteristic of disruptive innovations is that they are located in a different *value-network* than *sustaining innovations*. A Value Network is “the specific context within which a firm identifies and responds to customers’ needs, solves problems, procures inputs, reacts to competitors, and strives for profit” [Christensen 1997/2002]. They show a lower performance in the dimensions that were valued in the old network, while at the same time offering performance value most important in a different value network. This could either be a lower price (as is the case in discount grocery retailing), more convenience (as is the case in MP3 Music Players such as Apple’s iPod), or more customizability (as is the case in Dell’s built-to-order business model).

There are two potential markets for disruptive innovations. First, they can address those customers who are overserved by the functionality of their current provider. In the DIT terminology, this is called a *low-end disruption* and illustrative examples include low-cost airlines, online book resellers (such as Amazon.com) or discount department stores (such as Wal-Mart or Target). Second, a disruptive innovation can address those customers who have hitherto been *non-served*; i.e., unable to use the product. For instance, the online auction place e-bay allowed Internet users to auction off personal belongings to geographically dispersed groups of customers. Previously, this type of auction had been impossible to conduct. In the DIT terminology, this is called a *new-market disruption*.

In summary, there are two important factors, which together may lead to disruptive innovations. These are (1) overlapping value networks, and (2) disruptive circumstances:

- **Overlapping value-networks.** Disruptive innovations are located in a different value-network, where other performance criteria are the most important purchasing criteria for customers. However, the value-network of a disruptive innovation has a growing overlap with the traditional value-network [Adner 2002]. This means that even though in the beginning, disruptive innovations only satisfy the low-end customers of the

traditional value-network, they become attractive for more and more customers in the old value-network who ultimately switch over to the new value-network.

- **Disruptive circumstances.** Disruptive innovations only happen in disruptive circumstances. Either customers are overserved by established technologies or they are non-served customers, i.e., “people who lack the ability, wealth, or access to conveniently and easily accomplish an important job for themselves” [Christensen et al. 2004].

Under the assumption of the laws of Resource Dependence, increasingly overlapping value-networks in either low-end or new-market disruptive circumstances lead to so-called *asymmetric motivation*: Incumbents have a high incentive to flee into higher-margin segments rather than to fight their customer base in the low-end. Ultimately, their main customer base shrinks to the point where it is too small to sustain the organization and the incumbents therefore fail.

The potential for a low-end disruption is high if (1) there is an overlap between the old value-network of the incumbents and the new value-network of the disruptive innovation, (2) if the overlap increases over time, and (3) if a substantial number of customers are over-served.

The potential for a new-market disruption is high if (1) there is an overlap between the old value-network of the incumbents and the new-value-network of the disruptive innovation, (2) if the overlap increases over time and (3) if there are non-served customers.

A large fraction of the DIT-literature discusses the question how incumbents can react successfully if they concluded that a specific innovation has disruptive potential. Throughout his publications [e.g. Christensen 1997/2002, Christensen and Raynor 2003, Christensen et al. 2004], Christensen suggests to consider the following strategic dimensions when deciding how to respond to a disruptive innovation: (1) Organizational design, (2) structure of teams, (3) framing of the situation vis-à-vis the employees, (4) the strategy process and (5) the design of the value chain:

- **Organizational design:** In order to exploit a disruptive innovation, incumbents should set up a separate organization. According to the Resource Dependence laws discussed above, the size of this new organization should fit the size of the market in order to enable it to be patient for growth while at the time being impatient for profitability. Furthermore, the new organization should also use separate channels that fit into the value-network of the disruptive innovation: “Disruptive products require disruptive channels” [Christensen and Raynor 2003].
- **Structure of teams:** When deciding on the structure of the team that should be engaged to exploit the disruptive innovation, CEO’s should evaluate the fit of the innovation with the organization’s processes. If the innovation involves customary processes, teams coming from lower hierarchies of the organization can be successful. If the processes are entirely new, heavy-weight teams that include senior staff are necessary to push through the new initiatives against organizational resistance [Christensen 1997/2002].
- **Framing of the situation vis-à-vis the employees:** As an incumbent, in order to receive the resources necessary to develop a disruptive innovation, the situation created by the innovation should first be framed as a threat to the organization. The management team will then feel obliged to allocate substantial resources to the project and employees will follow because both groups are afraid of losing the position in the marketplace. Once a separate organization has been founded, though, the situation should be framed as an opportunity. This is because individuals become more open and creative when they approach a new situation with this mindset. Being open-minded and creative is a central requirement for the emergent, opportunity-seeking strategy development typical for new players [Gilbert and Bower 2002].
- **Strategy process:** This implies that in contrast to the planned marketing strategy, which is adequate for sustaining innovations in existing markets, disruptive innovations are best exploited through emergent strategies. This is because new markets, which are not yet defined, cannot be analyzed using traditional market research instruments. Instead, companies trying to market disruptive innovations have to develop strategies “by doing”. This approach also implies that they need the required resources to survive and to learn from early failure.
- **Design of the value chain:** When companies decide on their location in the value chain and their degree of vertical integration, they should try to be located in sustaining circumstances, i.e., in places of the value chain, where the customer is underserved by the performance of the products offered. Under these circumstances, integrated business models usually have high transaction-cost advantages over modular architectures [Christensen et al. 2002].

In the following section, we present the key elements of Nordea's e-banking strategy as it has evolved over the last decade. This provides the basis for the subsequent analysis of Nordea's approach along the different dimensions of the DIT described above.

### 3. Nordea Case Study

Nordea Bank is the result of several mergers between banks from four Scandinavian countries. Domestic mergers in Finland were speeded up after a sustained economic crisis in the early 1990's, which was caused by the collapse of the Soviet Union and the general downturn of the global economy. In 1997, the Swedish Nordbanken and the Finnish Merita bank merged to form MeritaNordbanken. In 1999, the Danish Unidanmark acquired TRYG and later on Vesta. In 2000, the Danish Unidanmark and the Swedish-Finnish MeritaNordbanken merged to form Nordic Baltic Holding, which then became Nordea after merging in 2000 with the Norwegian Christiana Bank Og Kreditkasse.

At the end of 2004, Nordea had almost 10 million private customers of which 4.1 million customers are active e-banking customers. Forty-five percent of the total population in the Nordic countries has an account with Nordea; either a main account or a secondary one.

Over the last two decades, Bo Harald, Nordea's Vice President Internet Banking Services, has been the main architect of Nordea's approach to e-banking. His job assignments pushed him to use computers to carry out some banking transactions. He said: *"While away from home, I started using the computer to authorize payments. The beginning of PC-banking in 1984 was a blessing for me. It became so much easier to do things from a distance."* [Echikson 2001]

Union Bank introduced electronic payment systems and started to phase out checks in 1982. *"I think the secret of our success was to start early,"* says Bo Harald. *"We started back in 1982 with telephone voice commands. By 1984, we added PC banking with a dial-up modem. It was like black and white compared to the color Internet, but it was a start and it gave us the experience."* [Echikson 2001] Starting out early also helped to keep costs down. *"E-banking is not expensive if you start early and you build it up gradually,"* says Bo Harald. *"However, it can be very expensive if you wake up in the middle of when things are already happening because then you need to ask expensive consultants for advice and you end up buying all the expensive bells and whistles to outshine your competitors."*

The e-banking channel was developed from within the bank through a joint effort by managers with product responsibility and the IT department of the bank [Reinhardt and Lévesque 2004]. During its early stages, the e-banking initiative at Nordea was pushed primarily by Bo Harald, as head of IT at Nordea, and two managers from the product area. Support from top management was limited, though. Only after promising sales statistics were reported from the Helsinki region, where the e-banking project was launched, did top-management embrace the e-banking strategy.

When building its customer base of online banking users, Nordea differentiated between two different customer types: Internet believers and non-Internet believers.

- The **Internet believers** have been online for years and have the know-how and trust to navigate the Internet, to shop online and to also do their banking online, i.e., they have a deeply engrained e-habit. To them e-banking is a normal day-to-day activity; something that is not even worth talking about with their friends. From a marketing perspective, these customers are therefore considered to be 'infertile' because they do generally not act as multipliers.
- **Non-believers** are just starting to surf the Internet. It requires substantial convincing to build enough trust and know-how so that they start doing e-banking and create an e-habit. Friendly branch employees who are willing to take the time to explain the benefits of e-banking are best suited for taking away that insecurity. Once they are online, however, these customers tend to be amazed and proud of their accomplishments and want to pass the news on to their friends. After turning them into believers they take the next step and become preachers – a viral marketing effect where customers acquire more customers. This viral marketing effect has been one crucial lever for converting Nordea customers who used to go to the physical branches into online customers.

After launching e-banking in 1984, Nordea has continued to introduce new customer interfaces such as Internet-banking, TV-banking, WAP<sup>2</sup>-enabled mobile phones, digital-TV and GPRS phones. Since the introduction of these new channels, usage patterns have shifted away from physical infrastructure to digital platforms as is shown in

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<sup>2</sup> WAP stands for Wireless Application Protocol, which is a secure specification that allows users to access information instantly via handheld wireless devices.

Figure 2. While the former decreased by a compounded annual growth rate (CAGR) of 6%, the latter went up by 16% annually with Internet-payments displaying a particularly strong growth rate of over 21%.

As a result of this shift to online channels the role of branch offices at Nordea has changed drastically over the last decades [Shin 2001]. While in the past bank clerks spent most of their time keying in transactions manually, this number has drastically decreased during the last four years. Today, Nordea uses its branches primarily for establishing personal relationships with customers. Trust built up through personal relationships is important when customers need to make complex decisions (such as purchasing insurance or a pension scheme). In this sense, banking is local but it does not always require a fully equipped branch. Sometimes an office is enough that does not offer the possibility to make transfers, but opens up the opportunity for fostering personal relationships.

In order to accelerate the migration away from physical banking transactions, such as check writing or transactions in branches, Nordea implemented pricing schemes that set incentives for customers to switch into the more cost-effective channel of online banking. In addition to using pricing as a way of channeling its business into the desired distribution channel, Nordea adheres to the premise that when introducing new applications, added value should not be given away for free. For instance, customers pay a monthly fee for Internet banking. If further services are taken up such as brokerage, credit card reporting or WAP, customers are also charged for them.

However, enticing customers to move to the online channel created tension within the overall organization since branch-based banking was threatened by the new channel. To alleviate this tension, Nordea decided, unlike many other banks, to fully integrate its online banking within its physical banking operations, thereby eliminating possible competition between the two channels. In fact, branch employees were enticed to move branch customers over to the Internet. To ensure high motivation among employees, the e-banking channel was not set up as a separate profit center, which reduced rivalry between the different channels. Instead, online revenues were credited to the bank branch the customer was affiliated with. The goal was to combine and leverage the cost-efficiency and convenience of the online channel and the personal, trust-building atmosphere of personal relationships. Ultimately, the ability to leverage the branch network to move customers to the Internet, thereby eliminating the need for expensive marketing campaigns, was one of the main reasons Nordea managed to acquire a dominant position in the online banking world.

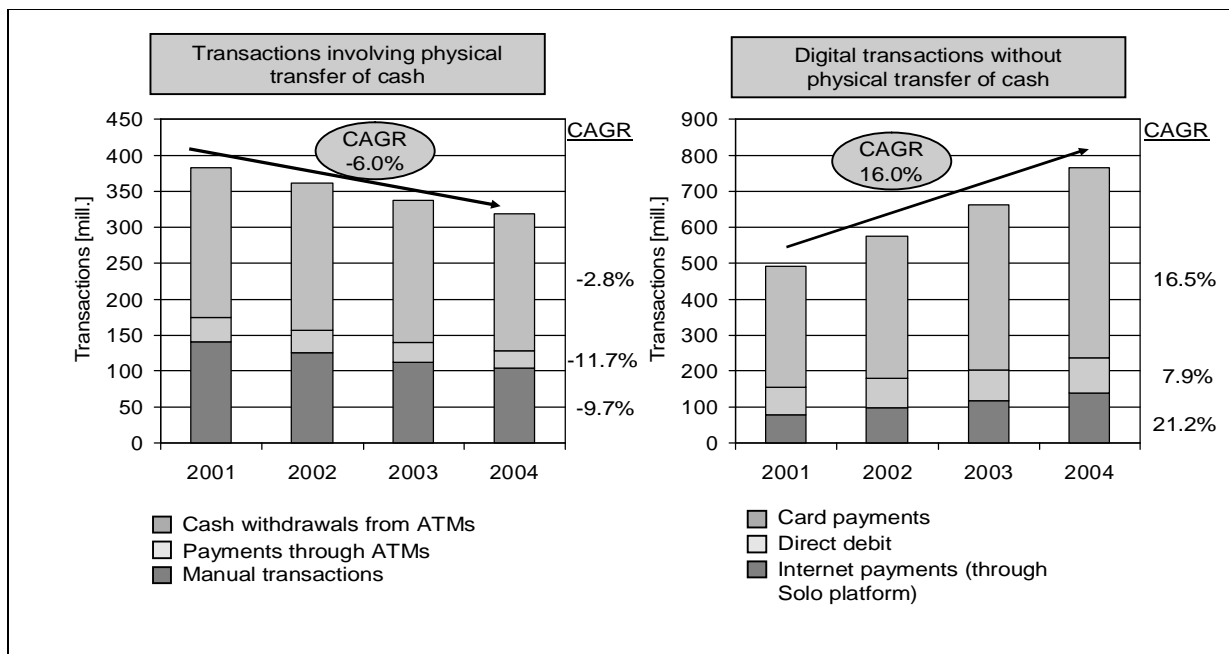


Figure 2: Cash transactions have decreased significantly while non-cash based payments have increased (Source: Nordea)

Nonetheless, as a result of this shift into online banking, the number of Nordea branches in Finland decreased significantly during the 1990s – down from 1,300 in 1991 to 400 in 2000. The number of employees shrunk to less than half during the same time period falling from 22,000 to 10,600. Nordea had to negotiate with the unions in great length. The bank handed out generous packages to avoid actually having to lay off employees. A further

argument was that the online channel had led to a great increase in customer satisfaction and that this would make Nordea a more competitive and stable institution in the future. In addition, labor unions were told that Finland was at the leading edge of Internet banking and that it was necessary to make changes in the organizational structure in order to maintain this lead. Finally, Nordea pointed out that it was problematic to have employees do manual, repetitive and low-paid work and that it would be much more valuable to educate these people to do a more creative and interesting job.

Regarding competition from pure e-banks that operate without any significant branch infrastructure, Nordea is not overly concerned. Bo Harald points out: "We haven't lost a significant amount of business to pure e-players. They may be cheaper than us but an e-bank has no personal selling capabilities, no customer base, and it costs them a fortune to acquire customers. [...] I am convinced people value the safety of branches and a trusted relationship. I believe traditional banks will play a central place in the e-economy. They have trust. They have established brands." [Echikson 2001]

Once Nordea had established a large customer base both on the private and the corporate level, the bank decided to leverage the competencies to also provide e-business solutions. This move into e-business was meant to differentiate the bank from its competitors, since all of them had started to offer e-banking services as well.

Nordea credits two factors for the success of its e-business services. First, the secure and economical log-on code has proven to be highly beneficial. The code is a combination of (1) a 9-digit customer number, (2) a one-time code from a list or scratch card, and (3) a sign-out code that is chosen and sent out by the central server. For customers, this type of log-on code is highly convenient since they do not need to install software on their computer or carry around any password-generating devices. At the same time, the same code can be used in any computer, mobile phone, fixed line phone, TV-banking in addition to direct interaction with staff members in branches. This secure and convenient identification procedure provided the platform for the expansion into other e-business services.

Second, Nordea considers the support of sales staff as crucial for the success of its e-business services. The initial impetus was the bank's effort to move customers from the physical brick-and-mortar branches into the e-banking channel. Once sales staff at the branch were convinced of the value of the online channel and had received the appropriate training for advising customers regarding the new channel, it became relatively easy to acquaint them also with the subsequent e-business initiatives.

The main e-business services that Nordea currently offers to its private and corporate customers are based on re-using existing information and technology. They are described in the sections below.

Through Nordea's **e-identification services**, Nordea customers can identify themselves on the websites of other participating companies and governmental agencies. Discussions with insurance companies in Finland led to an agreement that customers who log in their services can be sent to the bank and log in just the way they would for a regular banking session. But instead of getting to their online accounts, they are routed to the insurance company's service. The e-id is now especially widely used in the public sector and organizations. In fact, the Finnish Ministry of Finance has officially stated that if customers need strong identification, they can and should use the bank's identification standards.

Consider the case of a citizen who wants to access the state pension system to find out the status of his/her pension balance in order to decide how much she needs to save for retirement. Initially, she accesses the state pension system's website with links to all major banks in Finland that provide e-identification services. She then chooses her bank, accesses the respective website and identifies herself with her one-time password. Upon registering there, she can switch to other services, including the state pension service, while staying within the identified area. This state pension site is accessed 2,000 times a day.

The e-identification service has proven to be so convincing that the Finnish Post Office has decided to stop its own identification service. Instead, the Post Office uses banks because it would be too expensive to have a reliable identification service only for the post office.

The **e-signature service** came about by "accident". When Nordea told executives from Sonera, the largest telecom operator in Finland, that customers could get a loan online, Sonera asked if it would also be possible to sign a phone contract using the same system. Nordea agreed with Sonera that they would send all interested customers in an online phone contract through a link to Nordea's Solo Internet bank website where they could identify themselves and then sign the contract. This system was later extended to other businesses such as utilities that wanted to provide e-signatures for their contracts and has by now become a common e-signature standard in Finland.

Through Nordea's **e-billing services**, companies can send their invoices electronically to the bank, which then forwards them to their customers who have e-banking agreements, while those customers without e-banking accounts are automatically sorted out, and receive printed invoices via postal mail. Customers who get their invoice

through their e-bank connection are notified and asked: “Do you want to pay this bill?”; they can approve the payment with a mouse click and the bill is paid.

When e-commerce started to gain importance in the late 1990’s, e-billing was introduced as a consequence of customer’s unwillingness to pay with credit cards as there was a lot of discussion around security. In addition, not all online shoppers did have credit cards but they all owned a banking account. Based on this information, product developers at Nordea asked whether it would not be possible to reuse the payment mechanisms used for bills also for realtime e-commerce transactions between Nordea accounts. This service was first used in 1998 by Finland’s main telephone companies, which started to send their invoices to their customers directly through the Internet.

In Sweden, Nordea is sending out invoice files to a Nordea switch, which are then distributed to private and large corporate customers (e.g., a telecom company that sends invoices to its customers). As banks throughout Scandinavia increasingly start to provide e-billing services, real time payments are also gaining in importance since they offers the opportunity to make business "state-less". Buyers and sellers meet, close the deal, exchange payment, possibly exchange the already paid invoice if needed and part without anything left in payables or receivables.

Through the **e-salary function**, companies can send income statements straight to the e-bank of their employees thereby eliminating the need for printed salary statements sent via postal mail. Introducing the e-salary functionality required only little effort, since it essentially reuses the e-billing service.

The **e-payment function** is an adapted version of the invoicing function, which online merchants on the Solo platform can use for settling payments. Using this function, a customer can go to the website of any online store in the Solo marketplace and place an order. Then he clicks on a link to the e-payment system of Nordea where he requests to receive an electronic invoice. Upon approving the payment with a mouse click, the money is transferred right away into the seller’s account. The benefits of this method are twofold: (1) Merchants do not need to send out a paper invoice anymore; and (2) they do not need to worry anymore whether buyers will pay the invoice.

The evolution between 2002 and 2004 of the different e-business services is provided in Figure 3 below. The statistics refer to corporate and public service customers who want to start offering these services to their customers. For instance, the e-billing chart shows that in 2004 almost 10,000 companies including large telecommunication or energy corporations started sending e-invoices to their customers using the Nordea e-business platform. The compounded annual growth rate (CAGR) for e-payments, e-identification, e-salary and e-billing was respectively 15%, 66%, 118%, and 585%.

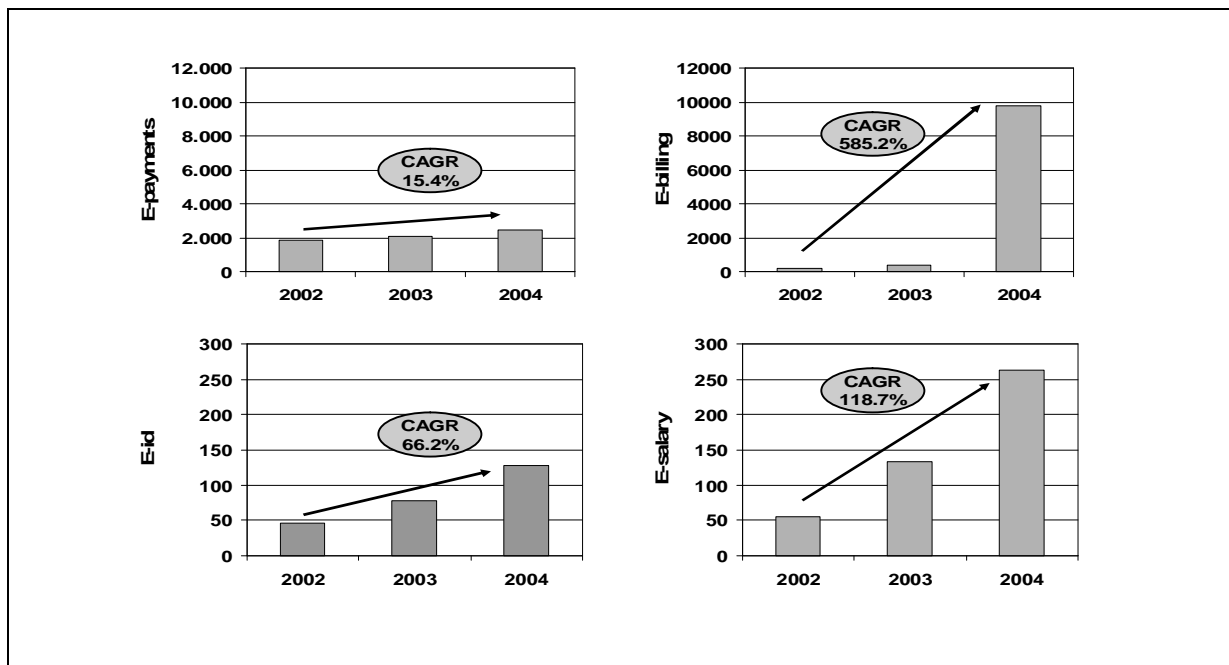


Figure 3: The evolution of the usage of e-business services (Source: Nordea)

#### 4. Nordea Example Examined Using the DIT

The goal of this section is to analyze what type of innovation e-banking has been to the business model of Nordea. To do so, we systematically analyze the case of Nordea along the strategic dimensions presented in section



two: (1) organizational design, (2) structure of teams, (3) framing of the situation vis-à-vis the employees, (4) the strategy process, and (5) the design of the value chain.

- **Organizational design:** As stated in the case, Nordea exploited e-banking entirely in-house as a joint effort by managers with product responsibility and the IT department of the bank. From the beginning, Nordea tried to engage all bank employees in the new processes. Thus, the size of the organization was, from the beginning, large. Consciously, the management of Nordea chose traditional channels, i.e., the retail banking outlets, to promote and sell the new e-banking services. The fact that this organizational approach proved to be successful in the case of Nordea suggests that e-banking is a sustaining innovation.
- **Structure of teams:** As the case points out, initially support from top management was limited. The e-banking strategy was only embraced on a larger scale after promising sales statistics had arrived from the Helsinki region where e-banking had first been tested. However, even though the support was limited, Bo Harald and his team were able to push e-banking through the entire organization at a relatively early stage of the development of the online banking technology. According to the DIT, this could be explained by the fit of the e-banking solutions with the established organizational processes, i.e., the similarity of the e-banking value-network with the established value-network.
- **Framing of the situation vis-à-vis the employees:** Through intelligent framing and adequate incentive systems Nordea was able to convince employees of the benefits brought about by the new banking channels. There were strong incentives for branch employees to move customers into the e-banking channel. Branch employees also understood that the new technology would make their jobs more interesting, since mechanical work would be substituted by customer-related activities. At the same time, management saw the enormous cost-saving potential of e-banking which was combined with high potential for sustainable and predictable growth. Hence, the success Nordea had in framing this situation as an opportunity both for management and employees also suggests that e-banking is a sustaining innovation.
- **Strategy process:** The strategy followed by Nordea was that of an integrated leader [Iansiti et al. 2003]. This means that Nordea started very early to use e-banking technologies inside the parent organisation. By doing so, Nordea was able to leverage synergies between traditional retail banking and e-banking. Because of its early start with e-banking, Nordea could afford to be patient before expecting substantial growth rates from the new channel. As Bo Harald explains: *“Yes, everything takes time. There are no fast takeoffs. Most products take five years before they take off. It was that way with foreign payments. It has been available for a while, but all of a sudden gone from almost 0% to 34% of all payments in the past year.”* [Echikson 2001] For the following two reasons, DIT would suggest that this type of strategy process is typical for sustaining innovations. First, the patience shown by top management can be explained by the similarities of the value networks of traditional branch banking and e-banking. Second, Nordea’s e-banking strategy which targeted both low-end and high-end customers would be highly untypical for disruptive innovations where incumbents are motivated to target primarily high-end customers with better performing products and services. A good example for this broad strategy are the e-business solutions shown in section three that target the whole spectrum of the customer base.
- **Design of the value chain:** Nordea has the integrated business model of a traditional retail bank. This means that customers can choose from a wide range of services (e.g. transactions, brokerage, savings, etc.) provided by one integrated supplier. DIT suggests that if a company is successful with an integrated value chain, then it is located in sustaining circumstances where customers are underserved with respect to the traditionally most-valued performance criteria [Apigian et al. 2005]. Otherwise, customers would be buying from modular vendors that bundle the services of multiple product providers. Thus, the DIT would point to the sustaining nature of e-banking as the explanation for the success of Nordea’s integrated approach.

## 5. Conclusion and Further Research

In this article we addressed a fundamental problem of the disruptive innovation theory which lies in the difficulty to categorize new technologies into sustaining and disruptive innovations. To illustrate this problem, we used the example of e-banking whose disruptive nature is debated intensely amongst researchers in the field. In our analysis, we first discussed the basic principles of the disruptive innovation theory and, based on the theory, outlined five main strategic dimensions that incumbent firms need to address when they face disruptive circumstances in their industry. Following the logic of DIT, in order to succeed in disruptive circumstances, incumbents need to take specific actions, such as creating a spin-out organization or using an emergent strategy process. By the same logic,

however, if incumbents are successful using sustaining approaches it can be assumed that the innovation is of sustaining nature.<sup>3</sup>

The description and the analysis of the Nordea case showed, first, that the bank integrated the new technologies successfully into its business model and, second, that all the actions taken by the bank were those that are only appropriate in sustaining circumstances. We therefore concluded that e-banking was a sustaining innovation for Nordea.

We posit that the main reason for the success of Nordea's approach is that the two value-networks of traditional retail banking and e-banking show substantial similarities. This argument follows the reasoning by Christensen and Raynor [2003]. Regardless of the channel that is used, customers value the trustworthiness of a bank, its convenience, and the pricing (i.e., interest rates and fees).

Established banks have typically built up a brand name of trust over many decades. In addition, their branch network reassures online banking customers that if they should encounter any problems, they have a physical location to go to. Thus, it is sensible for a bank with a strong brand such as Nordea to extend its name into the online channel. As Christensen and Raynor [2003] point out, "when customers aren't yet certain whether a product's performance will be satisfactory, a well crafted brand can step in and close some of the gap between what customers need and what they fear they might get if they buy the product from a supplier of unknown reputation". Regarding convenience, most customers seem to value the availability of a physical branch that allows for face-to-face interaction with knowledgeable staff. Finally, the price dimension is closely related to the issue of trust. Banks with an established brand name and a sizeable customer base will typically find it much easier and more cost-efficient to move their customers into the online channel than pure e-banks who need to build up a brand from scratch and attract customers (who typically already have accounts with other banks). On the basis of this assessment, it is unlikely that disruption will take place in the retail banking industry in the near to medium-term future.

Having stated this conclusion, it is important to look at the limitations of this research and outline areas for future research activity. An interesting follow-up on this study would be the application of different methodological approaches to the analysis of the Nordea case. For instance, building on the work of Campbell and Frei [Campbell 2003, Campbell and Frei 2004], it would potentially be insightful to analyze the cost structures of different business models and the profitability of different customer segments.

Furthermore, it would be useful to collect a broader sample both of pure e-banks and integrated clicks-and-mortar banks to challenge the conclusions presented in this paper. In this context, it would be of particular interest to conduct a study across different continents and cultures since banking systems and processes differ from country to country.<sup>4</sup> For instance, while the US is a check-based society, Finland had an established gyro system even before the advent of the Internet. Since the services, offered through the new e-banking channels built to a large extent on this gyro system, the implementation of e-banking presented a sustaining innovation to Nordea. Thus, it is possible that the disruptiveness of the Internet to retail banking differs depending on the country at hand. A cross-country analysis would potentially allow us to resolve certain contradictions between our findings and the implications of Frei's research.

However, regardless of these limitations, it is useful to continue analyzing e-banking using the toolset of the DIT. By doing so, we first expect to gain deeper insights into the banking industry itself and its evolution over time. Second, we hope to further develop the evaluation framework that was used in this paper, which can then be transferred to other industries. This research should finally also help us strengthen our understanding of the disruptive innovation theory.

## REFERENCES

- Adner, R., "When are Technologies Disruptive? A Demand-Based View of the Emergence of Competition," *Strategic Management Journal*, Vol. 23, Issue 8:667-688, 2002.
- Apigian, C., Ragu-Nathan, B. et. al, "Internet Technology: The Strategic Imperative" *Journal of Electronic Commerce Research*, Vol. 6, No. 2: 123-145, 2005.
- Bower, J. L., *Managing the Resource Allocation Process*. Homewood, IL: Richard D. Irwin, 1970.
- Campbell, D., "The Cost Structure and Customer Profitability Implications of Electronic Distribution Channels: Evidence From Online Banking," *Harvard Business School Working Paper*, Boston, 2003.
- Campbell, D. and F. Frei, "The Persistence of Customer Profitability: Empirical Evidence and Implications From a Financial Service Firm," *Journal of Service Research*, Vol. 7, Issue 2: 107-123, 2004.

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<sup>3</sup> In formal logic, this would be: If A then B. Not B. Therefore, not A.

<sup>4</sup> See Chesbrough (2003) for a similar study in the hard-disk drive industry.

- Carlile, P.R.; C. Christensen (2005): The Cycles of Theory Building in Management Research, Harvard Business School Working Paper, Version 6.0, Boston, 2005.
- Chesbrough, H.W., "Environmental Influences upon Firm Entry into New Sub-Markets - Evidence from the Worldwide Hard Disk Drive Industry Conditionally," *Research Policy*, Vol. 32, Issue 4:659-678, 2003.
- Christensen, C., *The Innovator's Dilemma*. New York: Harper Business Essentials, 1997/2002.
- Christensen, C., S. A. Anthony and E. A. Roth, *Seeing What's Next - Using the Theory of Disruptive Innovation to Predict Industry Change*. Boston: HBS Press, 2004.
- Christensen, C. and M. E. Raynor, *The Innovator's Solution*. Boston, MA: 2003.
- Christensen, C. M., M. Verlinden and P. Westermann, "Disruption, Disintegration and the Dissipation of Differentiability," *Industrial & Corporate Change*, Vol. 11, Issue 5:955-993, 2002.
- Eisenhardt, K.M., "Building Theories from Case Study Research," *Academy of Management Review*, Vol. 14, Issue 4: 532-550, 1989.
- Gary, L., "Taking Disruption to the Bank," *Harvard Business School Strategy&Innovation* article no. S0409B, 2004.
- Gilbert, C. and J. L. Bower, "Disruptive Change: When Trying Harder Is Part of the Problem," *Harvard Business Review*, Vol. 80, Issue 5:95-101, 2002.
- Hitt, L.M., F. Frei, "Do Better Customers Utilize Electronic Distribution Channel? The Case of PC Banking," *Management Science*, Vol. 48, Issue 6: 732-748, 2002.
- Li, F., "The Internet and the Deconstruction of the Integrated Banking Model," *British Journal of Management*, Vol. 12, Issue 4: 307-322, 2001.
- Iansiti, M., F. W. McFarlan and G. Westerman, "Leveraging the Incumbent's Advantage," *MIT Sloan Management Review*, 44, Issue 4:58-64, 2003.
- Pfeffer, J. and G. R. Salancik, *The External Control of Organizations: A Resource Dependence Perspective*. New York: Harper & Row, 1978.
- Reinhardt, G. and Lévesque, M.: "A new Entrant's Decision on Virtual vs. Bricks-and-Mortar Retailing", *Journal of Electronic Commerce Research*, Vol. 5, No. 3:136-152, 2004.
- Shim, N.: "Strategies for Competitive Advantage in Electronic Commerce", *Journal of Electronic Commerce Research*, Vol. 2, No. 4: 164-171, 2001.
- Useem, J., "Internet Defense Strategy: Cannibalize Yourself," Fortune Educational Collection, 1999, [www.fortune.com](http://www.fortune.com), access date: October, 14 2005.
- Yin, R, *Case Study Research*, Beverly Hills, CA: Sage Publications, 1984.