

HELSINGIN KAUPPAKORKEAKOULU
Tietojärjestelmätiede



Success factors and approach in new digital channel introduction –
case Metsc Corporation

HELSINGIN
KAUPPAKORKEAKOULUN
KIRJASTO

8504

Tietojärjestelmätieteen
pro gradu -tutkielma
Jani Kelloniemi
Syyslukukausi 2001

Johtamisen laitoksen johtajan päätöksellä 26/11/2001 hyväksytty
arvosanalla Hyvä 70 pist.

TOMI DAHLBERG
KTT

MATTI ROSSI
KTT

**Success factors and approach in new digital channel introduction –
case Metso Corporation**

Tavoitteet

Tutkielman tavoitteena oli tutkia onnistuneita sähköisten kanavien käyttöönottoja perinteisten kanavien rinnalla yritysten välisissä, sekä kuluttajille tarjottavissa palveluissa. Tutkinnan kohteena olivat hankkeen kypsyyteen ja muihin ennaltatodettavaan tekijöihin vaikuttavat osa-alueet jotka voidaan mitata jo ennen hankkeen aloittamista. Tarkoituksena oli kehittää näistä yksinkertainen analyysin mahdollistava kehikko, jonka perusteella kohdeyritykset, eli perinteisten alojen suomalaiset yritykset, pystyvät arvioimaan uusien sähköisten kanavien hankkeiden kannattavuutta sekä optimaalista strategiaa niiden kehittämissuunnitelmissa. Tavoitteena oli myös tutkia, kuinka hyvin onnistuneiden hankkeiden menestystekijät sopivat yhteen olemassa olevan teorian kanssa.

Tutkimusmenetelmät

Tutkielmassa esiteltiin nykyisten sähköisten kanavien (Internet, Mobiili, Digi-TV) käyttöönotossa nähtyjä yhteisiä onnistumisen elementtejä, jotka sitten yhdistettiin olemassa olevaan yritysstrategian ja tietojärjestelmätieteen teoriaan analyysin pohjan muodostamiseksi sekä tekijöiden validoimiseksi. Tästä kehikosta muodostettiin työkalu, joka ottaa huomioon menestymisen mahdollisuudet sekä optimaalin lähestymistavan perustuen kahdeksaan ulottuvuuteen. Empiirisessä osiossa haastateltiin laadullisina haastatteluina kahden Metson case-hankkeen edustajia ja näistä haastatteluista saadut tulokset yhdistettiin kehitettyyn viitekehukseen.

Tulokset

Olemassa olevan teorian sekä kuvaavien empiiristen esimerkkien pohjalta pystyttiin luomaan viitekehys, jonka kahdeksan eri ulottuvuutta antavat yritykselle analyysimahdollisuuden uusien kanavien käyttöönoton kynnyksellä. Näiden tekijöiden pohjalta voidaan myös valita hankkeeseen parhaiten sopiva lähestymistapa pilotoinnin ja strategiakehityksen väliltä.

Tutkimuksesta johdetut kahdeksan mitattavaa ulottuvuutta ovat: valitun kanavan kypsyys, yrityksen kokemuspohja, toimialan kypsyys, loppukäyttäjien tunnistetut tarpeet, tunnistetut hyödyt yritykselle, vaikutus prosesseihin ja niiden luonne, asiakkaiden segmentointi ja uskollisuus sekä kehitettävän palvelun rakenteellisuus.

Case-hankkeet Pulp & Paper portaali sekä Partner Web nähtiin yleisesti onnistuneina projekteina ja niiden toteutustapa oikeana. Haastatteluiden analysoinnin tuloksena syntyneet viitekehukseen integroidut tulokset vahvistivat ainakin kyseisen yrityksen kohdalla hypoteesit oikeiksi. Lopputulokset osoittivat lupaavia mahdollisuuksia kyseisten projektien onnistumisen kannalta ja viittasivat valittuun ja oikeaksi todettuun lähestymistapaan. Viitekehityksen käyttö ennen päätöksentekoa auttaa ulottuvuuksien tunnistamisessa ja lähestymistapojen valinnassa kun yritys päättää tutkia uuden kanavan käyttöönottoa.

Avainsanat

Sähköisten kanavien käyttöönotto, menestystekijät e-hankkeissa, sähköisen liiketoiminnan strategiat, kanavaintegraatio, Internet, Mobiili, Digi-TV

Acknowledgements

I wish to thank Cap Gemini Ernst & Young Finland for the opportunity to carry out my master's thesis in addition to regular work activities. I have had the chance to enjoy an excellent working atmosphere and I wish to express my gratitude for everyone in the DareStep unit. Particularly my unit manager Juha Turunen, as well as all the other people I have consulted deserve to be acknowledged for their helpful comments and ideas for my thesis.

My special thanks go to my parents who have always supported me in my studies and my fiancée, Mirja, for her encouragement and support.

I would also like to thank professor Tomi Dahlberg at Helsinki School of Economics who acted as my supervisor and gave me valuable advice and comments throughout the project.

Finally, I would like to thank Juhani Horelli from Metso Corporation for giving me the opportunity to study the case projects. The people interviewed during the analysis earned my gratitude by providing their valuable time.

1	INTRODUCTION.....	4
1.1	BACKGROUND.....	4
1.2	OBJECTIVES AND VIEWPOINT.....	4
1.3	PROBLEM DEFINITION AND SCALE.....	5
1.4	STRUCTURE.....	5
1.5	DEFINITION OF THE TERMS USED.....	6
2	PRIOR STUDIES.....	8
3	DEFINITION AND HISTORY OF DIGITAL CHANNELS.....	9
3.1	COMMERCIAL INTERNET.....	10
3.2	DIGITAL TELEVISION.....	13
3.3	MOBILE TECHNOLOGY.....	14
3.4	DIGITAL CHANNEL EXPLOITATION SUCCESS FACTORS.....	19
4	FRAMEWORK.....	24
4.1	ELEMENTS OF THE FRAMEWORK.....	24
4.2	DIVISION AND ORDER OF FACTORS.....	33
4.3	FRAMEWORK AND ITS INTERPRETATION.....	34
4.4	OTHER FACTORS TO CONSIDER.....	35
4.5	PORTFOLIO OF OPTIONS.....	35
4.6	LIMITATIONS AND ASSUMPTIONS.....	37
5	EMPIRICAL JUSTIFICATION.....	38
5.1	INTRODUCTORY CASES.....	38
5.2	CASE COMPANY – METSO CORPORATION.....	39
5.3	CASE A – PULP AND PAPER PORTAL.....	41
5.4	CASE B – PARTNER WEB.....	49
5.5	CONCLUSIONS OF EMPIRICAL JUSTIFICATION.....	55
6	CONCLUSIONS.....	56
7	SOURCES.....	58
7.1	PUBLICATIONS.....	58
7.2	REPORTS.....	58
7.3	OTHERS.....	59
7.4	INTERVIEWS.....	59
8	APPENDIX 1 – DEVELOPMENT AND HISTORY OF DIGITAL CHANNELS.....	61
8.1	THE INTERNET.....	61
8.2	DIGITAL TELEVISION.....	61
8.3	MOBILE TECHNOLOGY.....	63
9	APPENDIX 2 – INTERVIEW FORM.....	66

List of Tables

Table 1: Definition of the general terms used	6
Table 2: Definition of the terms specific for this study	6
Table 3: List of success factors identified in the cases	22
Table 4: Maturity of Industry as a factor in IT investment strategies	27
Table 5: The effect of different elements of the framework on the selection of suitable development method	34
Table 6: Pulp and Paper Portal success factors integrated to the framework of the study	47
Table 7: Partner Web success factors integrated to the framework of the study	54
Table 8: Example of a future project elements integrated into the framework	47

List of figures

Figure 1: Different forces that drive the adoption of new technology	9
Figure 2: The development of wireless devices	15
Figure 3: Nordea's Solo-service development method	18
Figure 4: Provision of a single user experience through different channels	20
Figure 5: Selection factors for different digital devices	21
Figure 6: Spider web of the different factors	35
Figure 7: Spider web of the different factors for Pulp and Paper Portal	48
Figure 8: Spider web of the different factors for Partner Web	54
Figure 9: Comparison of frameworks and their analysis	55
Figure 10: Development of Digital Television initiatives	62
Figure 11: Consumers' Use of Digital TV	63

1 Introduction

1.1 Background

In the past ten years companies have been bombarded with more new channels than in the previous hundred years altogether. These digital channels are mainly used to simplify companies' processes as well as to make them more efficient. New digital channels are also used in the development of customer relationships and interaction at customer interface. The most interesting channels and the ones studied in this paper include commercial Internet, mobile technology and digital television.

Companies have already experienced the public Internet for more than a decade - since its introduction in 1986 (Steinbock, 2000). The Internet provided new kind of interactivity and proliferation from the old and centralised channel structure. It also provided an unseen amount and deepness of information and shaped current business models. Still, companies embraced it mainly through trial and error. Companies did not know how to handle the Internet and its promised advantages. Should they have had a more broad and thorough strategy to enter the marketplace or start with pilots and smaller steps?

Although we've already seen the introduction of two more channels in the digital marketplace, my work experience has shown that companies are still just as unsure when faced with these new opportunities as they were when the Internet was first introduced. Still one can see traditional companies that thrive in the marketplace through the use of these channels as well as some others that struggle to survive in the new economy. The primary motivation for this study is to try to see the interconnectedness of different factors, companies and channels that come together to form successful new channel initiatives.

1.2 Objectives and viewpoint

This study will try to find out how companies successful with digital channels have introduced them among existing channels and whether there are any common reasons for this success i.e. how to combine digital and traditional channels and how to introduce new channels. I will look at these performing companies and their industries to see whether some common elements can be put together to create a framework, which companies can use when any type of new digital channel is introduced in the future. These empirical examples are integrated with contemporary strategy and information systems study to provide both theoretical and empirical justification for the framework. This framework is then to be tested through case studies.

The viewpoint of this study is the one of traditional companies in any sectors that are imposed to digital channels and forced to come up with a standpoint to embrace them.

1.3 Problem definition and scale

As mentioned earlier in the introduction, companies still face the problem of how to approach new channels whatever they might be now and in the near future. Therefore I define the problem studied in this paper in the following way: *“What is the optimal strategy for traditional companies when approaching new digital channels for the first time?”* In addition to this, I will also examine the factors that have an effect on this in detail.

Due to the restricted length of the paper I will not try to include an in depth analysis of all the present digital channels but focus on the mobile channel in order to give the reader a more thorough understanding of the characteristics and success factors of these medias. Also because of the above reason, the study will focus only on traditional companies and from the perspective of Finnish companies as government regulation has quite an effect on the possible strategies.

The case study (Metso Corporation) narrows the ability of generalization of the results, as they are not empirically tested. Further research is required to enable generalization.

1.4 Structure

This study will first define the channels mentioned above and provide a short history of each of them. The study will give more depth to the mobile channel and it's development to give a more thorough understanding of the factors that affect the success of an effort to realise the benefits that these channels offer. These factors include for example technology, applications, infrastructure, services and customers. This chapter will also analyse cases, where companies have successfully introduced new services or extended existing services through these specific channels.

After the initial analysis of the present state I will come up with a hypothesis or the framework to be used when analysing possibilities with a new channel. This framework will suggest different strategies for companies using the model ranging from doing nothing at all to conducting a full-scale strategic survey and even altering the original strategy of the company. Apart from empirical analysis of the present state, theories presented in current strategy and information systems science studies are integrated to the framework.

In the third part I will test the hypothesis by using two case projects from Metso Corporation. This empirical justification is carried out through analysing qualitative interviews and integrating the arrived results to the created framework.

In the end I will provide the conclusions of the study together with further recommendations and areas of research.

1.5 Definition of the terms used

The following table introduces the general terms and concepts used in the course of this study.

Table 1: Definition of the general terms used

3G	3G is a short term for third-generation wireless, and refers to near-future developments in personal and business wireless technology, especially mobile communications. This phase is expected to reach maturity between the years 2003 and 2005
B2B	Business to Business - the relationship and services offered between two companies
B2C	Business to Consumer – the relationship and services offered from companies to their end customers
B2E	Business to Employee – the relationship and services offered from companies to their own employees
Commercial Internet	The second phase of the Internet, derived from the governmental and academic developments of the Internet.
Digital Television	Digital television (DTV) is the transmission of television signals using digital rather than conventional analogue methods
Electronic Data Interchange	EDI (Electronic Data Interchange) is a standard format for exchanging business data. Starting with proprietary systems in the seventies, EDI-systems are now being implemented through the public Internet.
Interactive TV (iTV)	Interactive TV means allowing the viewer to interact with the television set in ways other than simply controlling the channel and the volume and handling videotapes
Mobile technology	Technology enabling B2C, B2B and B2E transactions through mobile devices
PDA	PDA (personal digital assistant) is a term for any small mobile hand-held device that provides computing and information storage and retrieval capabilities for personal or business use.
Rich media	A term for digital content that uses advanced technologies in presenting information, such as streaming video or interactive Java-applets.
SMS	SMS (Short Message Service) is a service for sending messages of up to 160 characters to mobile phones that use Global System for Mobile (GSM) communication
WAP	WAP (Wireless Application Protocol) is a specification for a set of communication protocol to standardize the way that wireless devices can be used for Internet access
WebTV	WebTV enables, through special software and hardware, browsing of Internet pages through a television set.

Table2: Definition of the terms specific for this study

Digital channel	Any channel using digital media in internal or external relations, between companies and/or end users.
End user	A real user of the system. In the case projects, these are the people who will use the final outcome after the development phase.

Field service automation	In the case support aimed at service activities performed away from the desktop environment as well as coordination of such services
Pilot	An effort to introduce a new digital channel that does not include strategy alignment, extensive process studies or strategic processes but is a targeted test with a new concept concerning a limited user group for a certain period of time.
Sales force automation (SFA)	System aimed at sales activities performed away from the desktop environment as well as coordination of such services.
Strategic exercise	An engagement where company's overall strategy is aligned with the engagement and its expected results, processes are carefully examined and modified and the whole introduction is designed before starting implementation.

2 Prior studies

To my best knowledge, there is very little research on the channel selection from the company's perspective. There is, on the other hand, some research on why consumers choose specific channels when they carry out transactions. These factors include easiness of use, efficiency, reliability, competitive prices, freedom of choice, knowing and respecting the customer, privacy, confidentiality, reach and receptiveness (Mallat et al. 2001).

Research closest to the objectives of this study is of electronic commerce and linking of value chains and business processes by Tuunainen (Tuunainen 1999), but her study concentrated solely on one channel, the Internet. Far-reaching research has been seen related to the success factors in information technology projects as well as the day-to-day management of these new channels (e.g. Earl 1989). The other objective of this study, whether to approach the new channel through strategy or pilot has been studied by Ansoff among others (Ansoff, 1990). Distinct types and success factors of successful re-engineering projects have been evaluated as well e.g. in a dissertation by Salo (Salo, 2000).

On another level, for example Turban, in his "strategic planning cycle" describes the phases a company goes through in planning and implementing its strategy in eBusiness (Turban 2000, 307). Turban's study covers areas such as industry and competitive analysis when formulating and implementing an eBusiness strategy. These factors have an effect on e.g. eBusiness processes and technology, but the study does not go into the level of detail presented in this study where individual digital channels and projects are separated and concrete success factors are identified.

Some research companies have investigated new digital channels exhaustively and have also come up with different strategies for new channel adoption. Forrester Research company (Dolan 2000) advised companies to start experimenting with the mobile channel by small scale pilots instead of full blown strategy study – and carry out these pilots through package based applications. This advice is certainly correct for specific companies in certain situations but it does not take the different variables into account.

Specific research on the theme of this study - factors why companies do introduce new channels and especially why and when should they introduce these channels – has not been carried out to date.

3 Definition and history of digital channels

The history of digital channels started already sometime in the 1960's with ARPAnet (Advanced Research Programs Administration) but as this study focuses on companies rather than non-profit making organisations, the history of digital channels relevant for this study started in 1986 with the public internet. One could of course argue the meaning of electronic data interchange (EDI) and this could have been one of the areas studied in this paper. As EDI-systems are though being replaced by Internet-based methods, and this paper attempts to help decision makers in their current decisions, I treated electronic data interchange as a subsection of the Internet. Two other channels described in more detail are the mobile channel and digital television.

Channel theories have received attention in contemporary studies. The value chain from producer to consumer will generally be modelled in accordance with consumer preferences and channel profitability – capital will flow to the most profitable channel. If the old channels are not able to adapt to the introduced competitor, the latter will become dominant. Internet-enabled e-Commerce has been seen as one of these so-called disruptive channels. (Dahlberg 2001)

These channel theories are deployed further in this study as channel maturity; end users' needs and deploying company's opportunities are integrated to the framework.

Other than the technology itself, there are numerous other factors that affect the adaptation and even the introduction of new channels. These factors include infrastructure, government regulation, demand (early majority), marketing potential and services offered. One could actually see four main forces that drive the adoption:

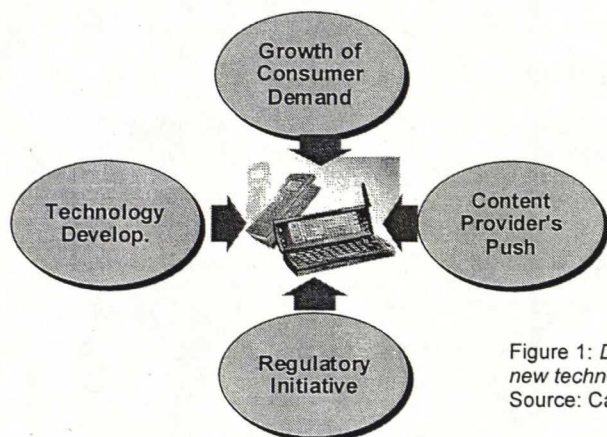


Figure 1: Different forces that drive the adoption of new technology
Source: Cap Gemini Ernst & Young 2001

Growth of consumer demand – how quickly are consumers ready to adapt new technologies and services and is the adoption really consumer or supplier driven.

Technology/Consultants/Content providers push - With content providers we mean players who provide content and services to these new channels. For content providers, each of these channels

are really only opportunities to leverage their content and reach new customers. They do, however, need to create new attractive services suitable for the channel.

Regulatory initiative – Regulatory initiative can have a major effect on companies that introduce new digital channels and services. A good example of this is the distribution of next generation mobile licences. Companies might face strict regulations when they seek new ways to reach their customers.

Technology development – Though technology is often the key enabler for new types of services, many companies are still unsure about whether to use the technology as a vehicle for growth. As this study will show, technology itself is not important, but the processes and business implications behind it are.

These factors are by no means independent but each of them has an effect on others and is affected by others. Consumer demand is driven by services offered and the quality of services is dependent on the development of technology – just to name a few examples. This is really the basis for this study, what are all the major factors that make or break companies' efforts to establish new digital channels for their employees or their customers.

The next sections will take a look at these new channels each in turn, providing a definition and a short history as well as an analysis of the factors that have affected the outcome of initiatives focusing on these channels.

3.1 Commercial Internet

3.1.1 Definition

The Internet, sometimes called simply "the Net," is a worldwide system of computer networks - a network of networks in which users at any one computer can, if they have permission, get information from any other computer (and sometimes talk directly to users at other computers). In the course of this study, the term extranet and intranet are also included in this definition.

An intranet is a private network that is contained within an enterprise. It may consist of many interlinked local area networks and also use leased lines in the wide area network. Typically, an intranet includes connections through one or more gateway computers to the outside Internet. The main purpose of an intranet is to share company information and computing resources among employees. An intranet can also be used to facilitate working in groups and for teleconferences. (www.whatis.com)

An extranet can be viewed as part of a company's intranet that is extended to users outside the company.

Physically, the Internet uses a portion of the total resources of the currently existing public telecommunication networks. Technically, what distinguishes the Internet is its use of a set of protocols called TCP/IP (Transmission Control Protocol/Internet Protocol). Two recent adaptations of Internet technology, the intranet and the extranet, also make use of the TCP/IP protocol.

3.1.2 Development of Commercial Internet

See appendix 1 for a description of the development. For the purpose of this study all four development phases are considered. Most emphasis though is put on the two last phases of the Internet – Commercial Internet and the rise of electronic commerce.

3.1.3 How to introduce the Internet as a new channel

Consider the example below:

Well really the bottom line is the Internet is another distribution channel that should be considered within your existing distribution channels and become a weapon for competitive advantage. Right now all the investments that you have made up to this point have been a learning process. The next step, however, is to really engineer a strategy and kind of retrofit that into your existing efforts.... So the emphasis that we tried to place on you today is to try to understand the methodologies used for developing a strategy and how to translate that strategy into a flexible architecture that enables you to realize the business objectives. (Lehmann, 1997)

This above example from a teleconference held by the Meta Group shows that already four years ago, when the commercial Internet was still in its growth stage and companies were just starting to experiment with it, some people (in this case Carl Lehmann) understood that it wasn't a separate channel or a separate business. The Internet should be seen as an extension of companies' existing distribution channels – and so should all the other new channels. Carl Lehmann also realised, that the investments that had been made without a real integration to companies' strategy and without taking a look at the business processes where these channels fit have been made – not in vain – but in order to learn the business and its new implications. The real benefits come from integrated and coordinated efforts to find advantages from strategy to implementation.

3.1.4 Commercial Internet exploitation success stories

This section will draw on some successful introductions of Internet as a digital channel. Finnair was taken as an example of a Finnish company that was successful through consideration of the right factors. Recreational Equipment (REI) was taken as a prime example of an international company that was able to introduce a new channel without real prior experience with it.

3.1.4.1 Finnair

Finnair's ticket sales online have been a success on a Finnish scale. By the end of 2000, there were almost 100,000 visitors a week to Finnair's site and company's target is to achieve more than EUR 30 million in turnover via Internet based channels in 2001. The following example just reinforces this notion:

Finnair's direct Internet sales have developed dramatically. The Finnair Neticket-office services with booking capability, aimed at the private consumer, gained unreserved popularity, which has continued to be strong. (Finnair News Report 22.05.2001)

Why has Finnair been successful in pursuing its Internet presence? Company's early entry to the market by experimenting in 1995 when Finnair introduced its first own homepage has built recognition and trust for the brand online. At the time the site was one of the most comprehensive online air travel sites. Although online ticket sales is a fairly established market (a lot of players who have already built trust and faith in the business) in 2001, Finnair was on the market already in March 1998 when it introduced a possibility to reserve airline seats through its Neticket Office service.

Company's main focus group has been and continues to be customers that are "High-value" individuals. These customers have traditionally been very technologically savvy, and time has meant more to them than money. This enabled Finnair to offer new types of services through the new channel to their main focus group fairly easily.

Technology used in electronic ticket offices is well established and this has reinforced the trust built by Finnair through its brand name. Finnair does not need to spend any more time trying to encourage customers to experiment with this technology. Finally, the products Finnair is selling through this channel fit it perfectly – they are perishable, high value and up-to-date information can be offered electronically.

3.1.4.2 Success factors identified

- a) Finnair conducted early experimentation with digital channels and built their brand accordingly.
- b) They targeted the appropriate customer segment and were able to exploit their existing customers' loyalty.
- c) Although not new to the media, electronic ticket sales as an established market was new to Finnair.
- d) The products offered were also very suitable for the channel.

3.1.4.3 Recreational Equipment Inc.

Recreational Equipment (REI) has installed computer kiosks displaying its online catalogue in all of its physical locations. They also have an extensive web-presence and an electronic version of their outlet (www.rei.com). What makes REI interesting is that it has succeeded in the introduction of this new channel and avoided the usual pitfalls. This section will take a look at the possible factors that created this success. (Schwartz 1999)

REI's physical shopping centers are entertaining and event-driven places where customers come to buy hiking equipment and they are many times referred to as "Hike Towns". Still they were able to

introduce a web presence – in a surrounding where creating entertaining shopping experiences is almost impossible. In the beginning, REI had three primary objectives why to go electronic:

1. Some of the merchandise is almost inevitably out of stock, especially in the smaller locations.
2. The website provides much deeper information on products.
3. To provide value added services that other shops of this type cannot offer, such as printing out hiking maps or book travel through REI Adventures.

REI's website is not only global but it's also local, it lists all of the happenings nearby a specific store. They also integrated their web presence to their physical stores as well as print catalogues – and they are able to identify and serve customers through these different channels with the website for example promoting new print catalogue to the regular visitors. They also offer “off-price” or “closeout” bargains through their REI-Outlet.com site. Apart from integration of their web presence to other channels, they also integrated their Internet systems to legacy systems. (Schwartz 1999)

REI's investment in this presence has been more than 1 million dollars during its 6 years history. They introduced this channel as an experiment already in 1995 and treated it as a profit center rather than a marketing expense, which was unusual at that time. The site brought in sales of about 10 million dollars already in its first year, triple what the company expected. Most importantly, REI has been able to reinforce the loyalty of its customers. REI has focused on customer needs already from the beginning and this drove REI to become one of the first companies to accomplish meaningful real-world integration among modern channels of distribution. Many of their customers are multi-channel customers and they have understood this and built on it.

3.1.4.4 Success factors identified

- a) REI focused on the customer from the very start when they decided to go ahead with digital channels.
- b) They were innovators in their segment and introduced this new channel in an early phase showing their ability to be agile and not afraid to experiment.
- c) Although the initiative focused on the customer, the company had a clear strategy to integrate existing and new channels and integrate these to their legacy systems.
- d) Internet was not seen as a separate channel, but as an extension of the physical channel – a multi-channel strategy.
- e) Similar to Finnair, they had loyal customers and introduced incentives for them to use the new channel.

3.2 Digital Television

3.2.1 Definition

Digital television (DTV) is the transmission of television signals using digital rather than conventional analogue methods. DTV merges interactive services and television so that the user can participate in

new ways with his or her favourite entertainment outlets. With DTV, companies are able to add interactivity in their commercials and invite consumers to take part in their promotions and eventually sales – much like with the commercial Internet. Companies are also able to set up electronic stores suitable for DTV so that a commercial might lead to a digital superstore where the consumer is able to do their shopping whilst sitting on their TV couch.

3.2.2 History and development

See appendix 1 for a description of the development. For the point of view of this study, the most important part is the one concerning interactive services – services provided by the companies that this study is aimed at. There seems to be a high demand for services such as banking and shopping through this channel – even higher than through the Internet. This could be explained by the familiarity of the TV set and also its pervasiveness in everyday life. Whilst watching commercials people can tap in to iTV-bank or shopping mall and manage their accounts or purchases.

3.2.3 Digital Television exploitation success stories

It turned out to be very hard to find success stories where digital television would have been used. After initial quick wins, these efforts have somehow managed to deteriorate in a matter of a few years – or months. Some successes can be seen in Britain, where the technology was first introduced in Europe. This only strengthens the notion that customers need to be ready for that channel, or else only early experimentation is viable. The successes are hard to point out, but some general notions can be made – the achievements in Digital Television have been made in areas where the transactions are very structured, such as in banking.

More interesting in the part of DTV is to look at the reasons for failure. The failures have predominantly come from too much too soon experiences – companies have tried to introduce full blown DTV channel into markets that were not ready for it. They have also concentrated too much on the technology and not on customers and their needs. DTV initiatives have also been separated from other channels and not properly integrated to physical outlets or legacy systems.

3.3 Mobile technology

3.3.1 Definition

Mobile technology in this study is defined as the ability to use mobile devices in order to get connected to the back-end systems of a company (Business to employee relation) and as the ability to transact with a company using mobile data services (Business to consumer). Mobile technology includes mobile phones with their short messaging system (SMS) and wireless application protocol (WAP) as well as more advanced personal digital assistants (PDA) and their applications. Mobile technology is not just communication without wires; the devices need to be mobile as well. Therefore the newest definitions view mobile technology as always on anywhere.

3.3.2 Development of mobile technology

See appendix 1 for a description of the development.

3.3.2.1 From talk to interaction

Mobile technology has been around for a long time. It's really communication, monitoring or system controlling in which electromagnetic waves carry a signal without wires. The communication part of started the use of wireless technology. Mobility, as we understand it nowadays, was first conceived as talking through mobile phones that arrived in the latter part of the 80s. Mobility has since evolved through data communication to an interactive service without wires between machines, people (customers and employees) and devices.

3.3.2.2 From simple phones to smart phones and personal digital assistants

Mobile phones were the one's that started the mobile technology wave. Since then, the phones themselves have received new functionality such as short messaging system (SMS) and wireless application protocol (WAP) functionality. More importantly, personal digital assistants (PDA) and mobile phones have started to converge creating so called smart phones and PDA's that are able to communicate wirelessly. These developments are described in more detail in the coming chapters.

Next picture depicts the development of wireless devices to what they are today:



Figure 2: The development of wireless devices
Source: Cap Gemini Ernst & Young 2000

One could also argue that these new mobile devices integrate the functionality provided by the two other technologies described in this study.

3.3.2.3 From infrastructure to services

As with other technology developments, mobile technology started with the development of the required infrastructure, NMT and GSM networks to name a few. After the networks were developed, companies started developing and offering applications to and from mobile devices. After the applications were fully developed, companies started providing complete services instead of just devices and applications (e.g. Wireless Application Service Providers, WASP).

The same development is evident today with new networks such as GPRS and UMTS. Companies have developed the infrastructure but no real applications or services exist. This is also the reason why the adaptation of WAP-technology got off with such a bad start. The technology was there, but

services did not exist. This is why companies should focus on the services and business logic rather than the technology itself.

3.3.2.4 Towards open technology and Internet enables mobile devices

The most prominent development in mobile communications combines most of the factors explained above – devices, data communication technology, operating systems and computer languages. The technology is becoming more open for developers, just like Internet technology a few years back. New PDAs are able to interpret the same source codes as our everyday Internet browsers, they can use multiple data communication methods (from GSM to WLAN) and operate on either Windows based or Palm based operating systems. All of this leads to faster and easier development of services and applications for wireless devices as well as to the much-hyped convergence of mobility and the Internet.

3.3.3 Methods of approaching

Users rushing to incorporate mobile commerce infrastructures into their e-commerce strategies must ensure that they also design appropriate applications. Not all e-commerce translates easily to m-commerce. The desire to get a piece of the emerging mobile market drives the common misconception that any good application will also make a good mobile application.

Our research shows the heightened interest in mobile and pervasive computing is leading many organizations to consider and even deploy inappropriate or sometimes nonsensical applications for mobile devices. Despite the current hype, few principles and methodologies exist for designing good mobile applications (m-apps). Until these detailed guidelines emerge (2003/04), users must rely on common sense and resist the temptation to deploy applications hastily just for the sake of getting something out there. (Metagroup: Going Mobile: It's Not Just a "Cordless Browser." 2000)

In the year 2000, researchers are coming up with the same insight again as they did a few years back with the Internet: new technologies should not be deployed before they are integrated to the strategy and existing channels of the company (compare the above quote with the teleconference example in chapter 3.1.3). This is what companies need to consider – is it in our interest to hastily introduce a new channel in order to keep up with the others, or should we approach it through strategy and processes.

Understanding what kind of customers a company has is the first thing that helps to determine what sort of wireless technologies could be brought to bear to help them. Analysis of the value that could be provided for different classes of output should be carried out. The type of output people want helps to determine what device should be offered. In the case of looking up a flight, maybe all one needs is, "Is this on time or not?" Or "How many minutes is it late?" That's useful, though a small piece of data that you need to get across. In other cases, you may need a full piece of content.

3.3.4 Mobile channel exploitation success stories

Mobile channel exploitation successes can be clearly divided into three areas: 1. Consumer information and entertainment services. 2. Financial applications. 3. Sales force and field service

automation systems. Due to the nature of this study (i.e. focus on business rather than consumer use), I will concentrate on the two latter ones.

3.3.4.1 Mobile financial applications

The first commercially launched mobile banking application was Nordea's (former MeritaNordbanken) Solo WAP service. Solo was originally their Internet banking application but it has developed since to a multi-channel service with mobile channel and even DTV pilots. Through Solo-service, Nordea's customers can take care of their daily banking needs, pay bills, transfer money, check their account balance etc. Solo service has also the largest number of active Internet users in Europe.

Solo has at the moment 1,5 million customers, with a monthly volume of 4,3 million sessions. The service is designed to be used as a multi-channel application; it is basically the same in phone, PC or ATM machine. The decision as to which device to use is made by the customer. Different channels have the same customer number and password – some customers use only one channel as others use all of them.

Nordea's history in eBanking is impressive. They started with telephone banking and X25 terminals in the first half of the 80s and had their first mobile banking applications, GSM banking, available already in 1992. After the introduction of Internet banking in 1996 and pilot for DTV in 1998, they introduced WAP-based mobile banking in 1999.

Nordea's mobile service has some 200-300 sessions a day, producing almost 10 000 sessions a month. According to an empirical survey by Mallat et al. (Mallat, 2001), most of mobile transactions in banking are fairly simple ones such as checking account balance etc. I believe this is caused by the information consumer rather than information creator nature of a mobile phone as well as the highly structured nature of the transaction (see Figure 4 on page 25). Combining information consumer and structured service is more viable than a highly unstructured service such as loan application. Although the transactions are carried through a mobile phone, usability tests have produced good results (Kaikkonen et al. 2001).

Nordea had a long history in developing eBanking applications. This combined with the ability of Nokia, who was the other party in the development project, created a project team that accomplished the mobile banking application in just 12 months. The project started in October 1998 and the first pilot was introduced in October 1999. This three-week pilot preceded the full-scale production, but it can be said that the pilot was just to test the technology and usability – strategy and advantages of the project were well known in advance. The following picture illustrates how Nordea segmented its customers first and designed the whole service before piloting it:

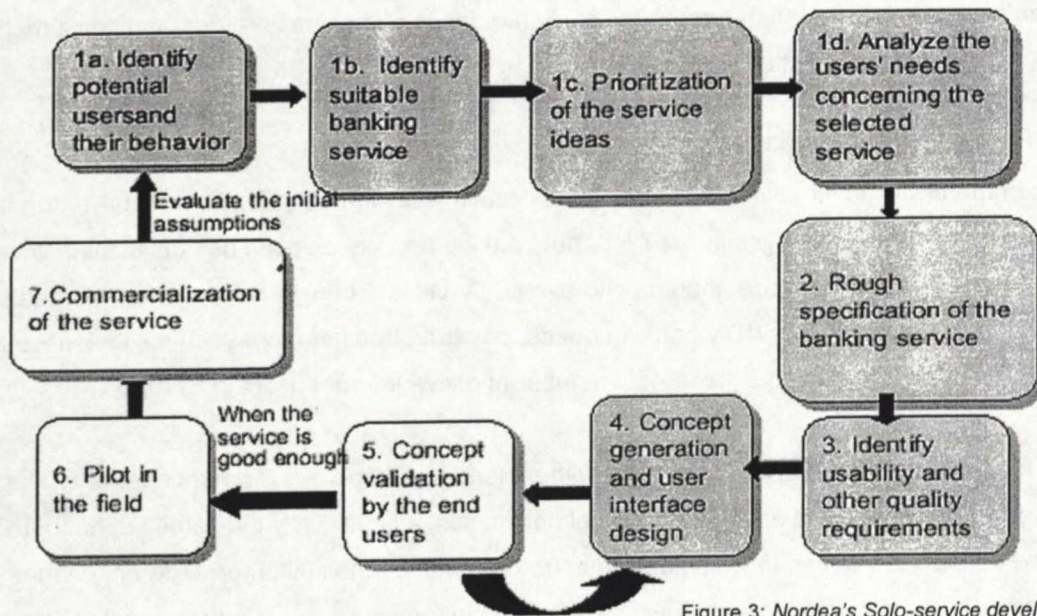


Figure 3: Nordea's Solo-service development method
Source: Kaikkonen et al. 2001

3.3.4.2 Success factors identified in the pilot

1. Nordea had a long history in developing eBanking.
2. It was also the first bank to introduce a mobile channel.
3. The user groups targeted and strategy was defined before piloting and full scale production.
4. Users targeted are technologically savvy and time poor, with the largest user group being 29 to 35 years old IT-professionals.
5. Nordea also took multi-channel aspects into account and didn't try to include all the possible services in all possible channels.
6. A strong partner with solid background in mobile technology provided the needed experience in technology and increased the maturity factor of the technology used.

3.3.4.3 Field service automation

Field service automation (FSA) can be defined as support aimed at service activities performed away from the desktop environment as well as coordination of such services. The company discussed in this section is a global manufacturing and services company with a mobile field service force of more than 1500 technicians and global market share of 20+ percent. The technicians handle thousands of service orders each day and make up a large section of the company's turnover. Due to the ongoing development of the service and writer's involvement in the development process the name of the company in question cannot be presented, hence from here on it is referred to as FSA company.

FSA company had not been involved in eCommerce or other digital technology activities before this mobility project. They had no experience of the technologies in question, but had well defined processes and loyal and long-term customers. They realized the need for improved back-office activity and more efficient field service personnel and identified mobile technology as a key enabler for these objectives. FSA company chose a partner to develop the concept and implementation and decided to

start, not with piloting, but with full-scale strategy refinement, process engineering and business case approach.

After they realized the need, they developed a strategy that would enable them to outperform their competitors in efficiency and customer care. Process development was based on this strategy and a business analysis was carried out at the same time. Architectural design was carried out and the technological solution based on PDA's in Pocket PC environment was implemented. A rollout in three countries is going on during summer 2001 and the development should be accomplished by the end of the year.

By June 2001, the benefits identified in business analysis were already evident. The company had reduced their administration costs by more than 15 percent and increased sales time by 20 percent.

3.3.4.4 Success factors identified:

- a) The company had a structured development from strategy through processes to implementation.
- b) Customers targeted were loyal and well defined.
- c) Technology selected was suitable for the process and was well established.
- d) In its sector and in field service automation, the company is a forerunner.
- e) The process developed was well structured and therefore fitting for the devices.

3.4 Digital channel exploitation success factors

Even for the technologically savvy companies, jumping into e-business is a daunting task. For those taking that first step, putting a dot-com facade on a brick-and-mortar company will not necessarily position them for Internet economy success. Companies that believe an Internet strategy is all about breakthrough tactics (e.g., spinning off a dot-com) will trail behind other enterprises that view the Internet and other new channels more holistically.

The number of devices that users have access to is increasing rapidly. One of the issues that businesses face then is that, as the number of these devices increases, new channels are being introduced amongst other points of interaction to which businesses have been already adapting to for years. The commercial Internet was introduced as a new channel a few years back. At this time companies have to be able to integrate what happens at the physical channel, over the Web, in call-in centres and through mobile devices. There are numerous different channels to talk to your customers and partners; and these have been increasing rapidly. Understanding what kind of customers you have is the first thing that helps you to determine what sort of digital technologies could be brought to bear to help them. These customers can be internal (employees) or external such as consumers and both groups include a variety of needs and characteristics.

3.4.1 Coherent channel structure and multi-channel interaction

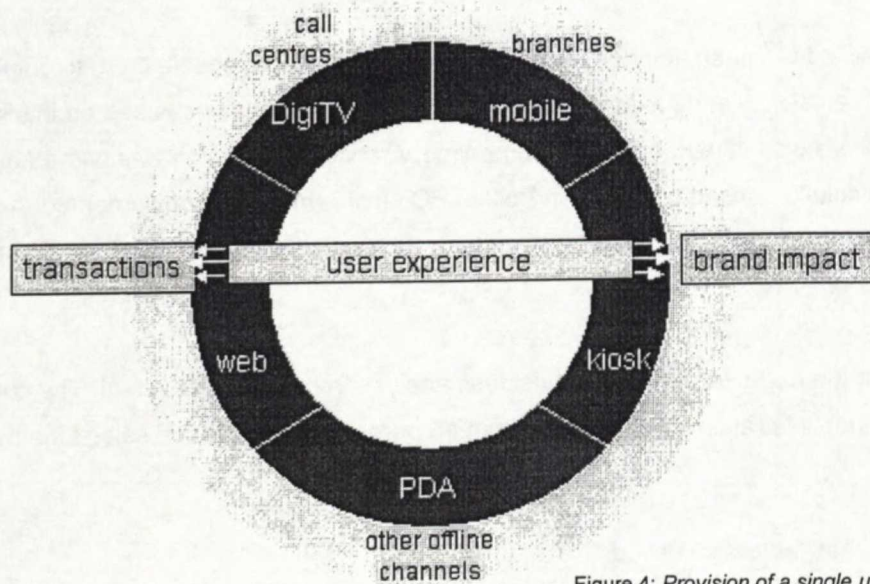


Figure 4: Provision of a single user experience through different channels
Source: Cap Gemini Ernst & Young 2001

Customers or a company's employees don't view new channels as separate from others. The lesson is then, as the above picture shows, one needs to be able to provide single user experience through all the channels offered and understand and recognise the customer in all of them.

Consistency is the first issue that the businesses have to face. They have to make sure that the specification of a product on the Internet is the same as in a catalogue. Also the price quoted in a physical store for a particular customer needs to be the same when the same customer calls in. Next is responsiveness. When a new channel is introduced, how quickly can a company adapt to that new channel. Having existing content be present on a new channel having the same business logic that has been introduced through existing channels can turn out to be costly. How can a company be efficient about leveraging services used by one channel to be used by another? Furthermore, how can you integrate responsiveness and consistency?

3.4.2 The role of technology

Contrary to popular belief, technology is not the single most important issue to consider in the introduction of new channels. Technology does drive the adoption to a certain extent, but should not be the only factor on which decisions are based. Technology itself can be divided into two different areas: the underlying standards and communication methods and the devices themselves. I will now take a look at each in turn.

When a company decides to investigate a certain channel for exploitation opportunities, it should first establish its risk position and define customer profiles, which help the company when approaching this new channel. Based on these factors, the company can decide how mature should the channel be and is the right time to approach it now or sometime later when customers are more willing to tap to that

channel. More risk averse companies with customers who are not that technologically savvy might find a better path by postponing their efforts to a later stage. Others more willing to take risks and that have more technologically enabled customers can start experimenting with pilots or strategy already earlier. Most important factor is though – technology itself is not important, services offered are.

The other area concerns the devices used. Companies should not try to find an all purpose device that fits every need, but try to map different opportunities among the value chain and base their device selection on those. As with standards, the maturity of the technology does play a role. If customers or employees are not equipped with a PDA, there's no point in offering services for that type of technology. In the selection of devices, at least four factors need to be examined: the simplicity/complexity of the device and the services that need to be carried out, whether the device will be used as an information creator, or an information consumer. Meta Group has come up with a matrix that describes these selection factors and their interdependencies:

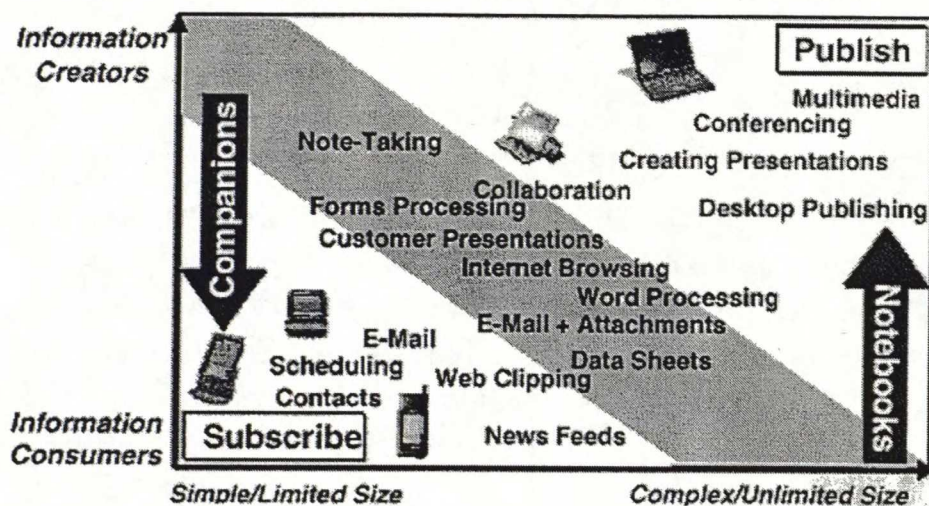


Figure 5: Selection factors for different digital devices
Source: Meta Group Inc.

3.4.3 The role of company and industry characteristics

When faced with a new channel, the need to consider one factor is inevitable – how mature is the company. This will have an effect on the agility of the company as well as its risk position. The more mature the company is, the more resources will it usually have. It will also have an established market position and loyal customers, but will be more risk averse than new start-ups. Another factor that certainly affects is the maturity of the industry. If competitors are already experimenting with new channels, the need for a company to investigate it becomes higher. In addition to its risk position, the innovativeness of the company, innovations' role in its strategy and their public reputation will affect the speed at which the company should enter the marketplace through new channels.

The above-discussed factors had to do with the general image and strategy of the company, but also more contemporary and functional aspects will have an effect on the adoption of new channels. As the opportunity for extra revenues from new channels (as has been a clear case with the commercial Internet) becomes imminent, companies would be fool not to investigate them. Also, the need for

employees' mobility and flexibility will drive the adoption, as can be seen with traditional service companies that have huge field service personnel.

3.4.4 Findings

This chapter will conclude this section of the study by listing and explaining all the factors that seem to have an effect on the success of a new channel introduction. The most important ones will be selected in the following section as elements of the framework. The table below will list these factors and they are discussed in more detail below.

Table 3: List of success factors identified in the cases

Factor / Case	Finnair	Recreational Equipment Inc.	Nordea	FSA company
User Segmentation and loyalty	X	X	X	X
Coherent multichannel structure		X	X	
Maturity of company in relation to the channel	X	X	X	
Maturity of channel	X	X		X
Industry's maturity in relation to the channel	X			
Structure of the service	X		X	X

User segmentation and loyalty were surprisingly present in all of the selected cases. When companies had targeted and defined their target group for the introduction of a new channel (both internal and external), they could provide the users with targeted services and offerings for specific and defined devices – this accelerated the adoption of the service and provided users with more added value. Loyal customers presented a fertile ground for companies, as they were more willing to explore new services and saw the company as a trustworthy partner lowering the level of channel and company maturity factors.

Right and targeted devices were also an important factor. Providing structured and targeted information or services through a specific channel proved to be more important than the technology itself. If the service is user friendly, users will use it. The devices should also not be considered as separate channels, but companies' should establish a coherent multi-channel structure where new channels are treated as supplementary parts of the whole and provide a fit between the different devices, processes and strategy. Also the more structured the service introduced is, the more automated the procedure can be.

Right time must be the most important factor to consider when introducing a new channel. This includes three elements: maturity of the company, maturity of the technology (and users) and maturity of the industry (is the company a forerunner or not). I will examine each of these in turn.

Maturity of the company is an issue to consider. The companies examined in this study were deliberately chosen to be mature companies and I would have expected that their experience in digital channels would have an impact on their ability to introduce new digital channels successfully. This

was true e.g. for Finnair and Nordea, but the logic didn't work for the manufacturing company examined in the mobile chapter. One thing was in common though for all the companies examined – all of them were early experimenters of these technologies. This might be so as they have been experimenting longer than others and benefits are thus evident – or early experimenting might actually be one of the success factors. In conclusion I would say that companies with a long track record in digital channels that are also early, but not careless, experimenters with new technology will be able to reap the benefits quicker than laggards or companies with less experience.

Related to devices and technology, the more mature the technology is, the more able and willing customers are to use it. This can be overcome by targeting technologically savvy customers who are the innovators and do trust in the selected technology or a company can leverage its reputation and established customer base to prove the maturity of technology. In sum, there's no point in offering services to devices when the device penetration is too low – on the other hand there will be no devices unless services are offered to them. Early experiments do seem to be justified for the example companies in this paper. Maturity of the industry does help when introducing new channels, but when they are just replicates of others', the company is not introducing anything value added to its customers – its just keeping up with the pace. All told, if a company sees an opportunity in a new channel it should try to exploit it before the majority of its industry does.

In an ideal world, when faced with a new channel a company would first develop or modify its existing strategy, then define processes and lastly develop services. In the fast pace of product and channel development today, this is not always possible. Sometimes the development does start from strategy, but in others it starts from processes or even from service pilots. The options are explained in more detail after the framework has been analysed, but based on the above example cases, a pilot implementation seems to be in place when a clear opportunity is seen, the technology is solid and the investment or process considered is not seen as a strategic one. When the new channel is viewed to be strategic and investments in it will have an effect on the overall processes of the company, then a strategy must be defined before any action regarding processes or services is taken. At some occasions, with solid technology and packaged applications, the development can start by process analysis and definition of clear improvement opportunities by the selected technologies (usually by this phase, a pilot or strategy has been carried out anyway).

Companies trying to adapt their current systems to a wireless environment (or to any other channel for that matter) and those that have not figured out how to be adaptive to new channels may be able to quickly dedicate a lot of effort to addressing the wireless channel. Whatever the next channel that comes across, they will wind up getting beaten by their competition on that one, the next one, or as it continues to happen.

4 Framework

This section will draw up conclusions from previous sections and integrate these with factors identified and hypothesis created in earlier studies. The aim is to build a framework that can be used by established Finnish companies to evaluate ways of new digital channel utilization. Dozens of different factors can be found when trying to establish such a framework. Only the most relevant and common ones are included though with the intention of creating a simple and coherent model that can be used commonly by companies functioning in different sectors and industries.

4.1 Elements of the framework

The framework takes into account factors that were found in the earlier sections, but also introduces some new issues that need to be considered. These new issues relate the channel to the strategy and objectives of the company. The following section lists the factors of the framework, their explanations, importance and emphasis (strategic, piloting). The scales introduced are preliminary and should be empirically tested for validity.

4.1.1 Maturity of technology/channel

Maturity of technology defines the stage at which the technology is at the time of the introduction of a company's new channel. This is relevant as piloting has been the best strategy when technology has been at an early stage of its life cycle. On the other hand companies that have been able to tap new channels early in their life cycle have been most successful in exploiting them (see positive feedback below).

Including this factor in the framework can be justified by the empirical examples provided above, as well as by some theoretical research conducted earlier. Maturity of technology is closely linked to the value of other users (and indeed the number of end users), which increases as more nodes are connected to this specific technology. This has been extensively studied by e.g. Shapiro and Varian as a concept of network effects and the positive feedback they provide. The value of connecting to a network depends on the number of other people already connected to it and other things being equal, it's better to be connected to a bigger network than a smaller one (Shapiro, 1999 p. 174-175). Positive feedback occurs when a certain technology is seen by consumers as gaining a dominant position in the near future and therefore, in order to gain from network effects, selected by most of the users providing that dominant position (Shapiro 1999). The concepts of positive feedback and maturity of technology are also intervened in the sense that the more mature the technology is, the more there are changes of knowing whether there will be positive or negative feedback.

One should be careful in piloting of a new technology as an industry leader as this might be too premature. A so-called giveaway situation might occur where the buyers (end users) do benefit from it, but the company offering services through this new channel does not benefit from it. This is more likely to occur in technology-driven companies in cases such as: technology offered prematurely, the

product is introduced before the market is ready to pay for new technological advances or when the potential demand is not large enough. (Ansoff 1990 p.175)

Assigning a tentative five-point scale based on technology diffusion theory:

1. Introduction – technology is new and unfamiliar to most companies and their customers, e.g. WebTV in 1995. The company in question has no prior experience with the channel.
2. Experimenters – technology has been acknowledged and preliminary standards are in place, e.g. Finnair's Internet introduction in 1995. The company in question has some preliminary experience with the channel.
3. Early majority – technology has gained standards and is recognized as the leading one in its field, customers are still new to the technology and only innovators use it regularly, e.g. Nordea's WAP-bank introduction in 1999. The company in question has piloted the channel and is fairly familiar with it.
4. Majority – technology is established and most of the companies and their customers are familiar with it, e.g. Finnair's Neticket introduction. Company has a broad experience with the channel.
5. Maturity – technology is mature and companies starting to exploit it at this stage have no other option but to copy other's behavior, e.g. Internet at this point. The channel is integrated and widely used within the company.

The importance of this factor is significant, but where to put emphasis is not that clear. There are some advantages to tap the channel when it's new, but clearly, when customers are more familiar with the channel and the technology is more stable, opportunities are bigger and risks are smaller. In addition, when the channel is more mature and its uses for a company limit to the uses by existing competitors, clear strategy and market opportunity studies are in place to position the new channel appropriately to a profitable market segment. Therefore I would conclude that the more mature the channel is, the more emphasis should be given to strategy and vice versa – as the channel is new, companies should try to exploit it swiftly and start by piloting.

4.1.2 Maturity of company's business

The more mature a company is, the more resources it will usually have. It will also have an established market position and loyal customers. On the other hand it will usually be more risk averse than new start-ups. Therefore this factor needs to be taken into account. When defining the maturity of a company, it should also be connected to its maturity in using that channel – i.e. the amount of experience the company has with it. Assigning again a tentative five-stage-scale for company's business' maturity:

1. Start up – the company has no existing operations and is introducing its services through one digital channel, e.g. Amazon.com in 1997.

2. Start-up exploiting new channels – the company is still not established and is looking for new channels to integrate with its existing channel, usually still risk takers and agile companies, e.g. Egg bank in the UK.
3. Agile established companies – companies that are well established and have a history with different channels. Have an image as innovators and are ready to exploit new channels at their early stages, e.g. Nordea.
4. Normal established companies – companies that are fairly indifferent towards new channels. Are willing to exploit them as soon as clear cost savings and a benefits' logic can be presented, e.g. most traditional Finnish companies.
5. Risk averse established companies – companies that are focused in their existing channels and are willing (and able) to explore new technologies when they threaten their existing channels or when these channels have matured enough, e.g. Finnish SME's in traditional industries.

The importance of this factor in decision-making is clear. Risk factors, resources and image have an effect on when a company begins exploiting a new channel and whether they do it by piloting or through a strategy study. Therefore, the more established the company is, the more suitable a new digital channel strategy study is before entering this new channel. Conversely, a start up that is more agile and willing to take risks can experiment with new channels by piloting and try to gain advantages by acting as a first mover.

4.1.3 New channel usage in the industry

Maturity of an industry does not in this context refer to its overall maturity, but to its maturity related to the channel in question. If competitors are already carrying out experiments with a new channel, the need for a company to investigate it becomes higher. This has been seen in the automotive industry as well in book retailing. The same concept of network effects and positive feedback presented in maturity of technology can be applied here as well, justifying the relevance of this factor from a theoretical side (Shapiro, 1999 p. 174). Applegate provides another theory that deals explicitly with this factor in his contingency approach to IT management (Applegate et. al. 1996). When mapping a company and its digital channel capabilities against other players within industry, two different sectors need to be taken into account – operations and marketing. Considering the relative position versus industry leaders provides different competitive investment strategies that can be applied to the theme of this paper. The following table illustrates these approaches:

Operations gap versus industry leader	High	Increase integrative capacity	Catch up
	Low	Maintain advantage	Increase flexibility, responsiveness / differentiate products and services.
		Low	High
		Marketing gap versus industry leader	

Table 4: *Maturity of Industry as a factor in IT investment strategies*
Source: Applegate et. al. 1996

Relevance to this study can be found in the top-right corner of the table – if the industry is mature with a chosen technology or a channel, the company should pursue it with utmost importance where as when the company is at the same level with the industry leader (i.e. the channel is not exploited at the moment) the need to engage in it is far lower.

Depending on the size of the company and possible opportunities a pilot implementation or a strategy study is in place. As this study examines traditional Finnish companies the sizes of companies and projects in this field are fairly small. Good examples of these are the industries in which companies have large field service forces. When e.g. companies in machine repair and service business have introduced a mobile channel and services that increase efficiency for their employees, the cost structure changes so that it forces others with no mobile channel to introduce one just to keep up with the innovators. The following tentative grading structure can be applied:

1. Immature industry – the channel in question is unfamiliar to the industry and no company has piloted it. E.g. Mobile technology in traditional Finnish SME's.
2. Affected industry – companies have noticed the possibilities of a new channel but are not yet actively developing it. E.g. Mobile technology in marketing.
3. Experimenting industry – innovators of that industry are piloting the channel or defining a strategy on how to exploit it. E.g. Digital Television in retail banking.
4. Maturing industry – a larger section of companies within the industry have moved from experimenting and piloting to developing a strategic fit between the new channel and their core strategy. Commercial Internet in automobile industry.
5. Mature industry – companies within the industry sector have established presence in the new channel and have extensive history of it. Commercial Internet in book retail.

4.1.4 Need

The need for the introduction of a new channel is much harder to define than the previous factors. The need can arise from customers, employees or indeed from the industry. Examples of needs arising

from customers are web-catalogues of traditional companies' products for their distributors or end users, needs arising from employees include the need for mobile devices and services for field service personnel and the needs arising from industry's side could be in the form of web-based industry market places and integrated supply chains.

This factor is the most subjective of the ones studied, and this grading should be considered preliminary and reconfigured case by case:

1. The channel is new. Needs are not presented by customers, employees or the marketplace. E.g. Digital Television in grocery retail in Finland.
2. Some needs can be identified, but they are not clearly expressed and the relative costs are too high.
3. Customers / employees have expressed some demand for services. E.g. WAP-services in the Nordic countries in the beginning of 2001.
4. End users have expressed their needs and benefits seem to outweigh the related costs.
5. There is a clear need for one or many of the interest groups presented above. E.g. Mobile technology for field service personnel of machinery service and repair companies or mobile technology for sales force within insurance sector.

As the need can arise from different parties, company's action should reflect this. When entering a global industry marketplace (e.g. Auto Exchange) there is no room for piloting nor is there a possibility to do nothing. At this point a company needs to develop a strategy on the exploitation of this new channel. This is also true when the need arises within the employees (e.g. mobile field service personnel) as processes need to be examined before any new technology is introduced. Therefore, the more need there is for a new channel, the more emphasis should be put on developing a strategy and new processes for this channel.

4.1.5 Opportunities identified

Opportunities at the introduction of a new digital channel can be defined as market potential in B2C implementations and cost reduction or efficiency in B2E and B2B implementations. When gathering theoretical evidence around this factor, one might consider e.g. transaction cost theory as an explanation for opportunities. If the distribution system can be made more efficient within the organization or from the customers' perspective, the end users will embrace the system (Shapiro, 1999 p. 101). Opportunities can be found approaching from top-down (processes) or from bottom-up (technology) depending on the nature of change and the role of top management and research units (Ansoff 1990 p. 51 and Applegate 1996 p. 58).

An opportunity can be identified through a market study where customer preferences are mapped against new channel opportunities – one great opportunity was seen by retail banks in the Nordic area as a result of the quick uptake of commercial Internet by the banks' customers. This opportunity can

also be identified through previous successes in other industries or segments – for example imitating the success stories of book retailing in other retailing segments. A final way to recognize an opportunity is related to companies' processes and supply chain – when a clear inefficiency can be identified in these, one can map the fit of a new technology to the opportunity in that process (B2B and B2E).

Another way to look for opportunities within information technology and new digital channels, whether they are top-down or bottom-up initiatives, is to use Michael Porter's five forces model throughout his value chain theory. A company could examine each part of their value chain (according to Porter) and see the opportunities and threats offered by substitutes, competitors, buyers, suppliers and new entrants (Porter 1985 p. 151).

Again, providing an example of the five point scale:

1. No opportunity identified – no opportunities can be seen in other industries, customer wants or internal processes. No examples apparent.
2. Opportunities seen in other industries – the benefits of a channel have been proved in other but not related industries or processes. E.g. DTV's benefits have been identified in retail banking, but not in machine service business.
3. Opportunities seen in related industries – benefits have been gained in related industries or related processes. E.g. Mobile technology benefits shown in machine service, that could be of use in auto retail's sales force automation
4. Indicative results show benefits related to the company – second hand information or high-level process studies implicate opportunities for efficiency or market share improvements. Mobile banking benefits of Nordic retail banking could be applied to the U.S.
5. Market or process study indicates large opportunities – a process study indicates clear inefficiencies that could be made more efficient by new technologies or a market study implies clear market opportunities through a new channel. E.g. field service personnel process study in FSA company case (the example in mobile technology FSA chapter) showed clear inefficiencies that could be made more efficient through mobile technology.

As opportunities usually need to be identified in the early stage of channel development, they require immediate action and therefore, when a clear opportunity is identified, a company should start by piloting and develop a long-term strategy at the same time. This ensures that the company is the first to tap that opportunity and is able to establish a first mover position that has been one of the success factors in the cases studied in this thesis. Implications might be somewhat different when opportunities are identified in process studies, as these usually require closer inspection of the processes in question and have to some extent more strategic meaning. Despite, I would conclude that the bigger the opportunity seen, the faster should a company try to exploit that and therefore start by piloting.

4.1.6 Nature of the process

Definition of processes is not an easy task for many companies. In this paper processes can refer to whole processes such as customer care or to a process module such as reporting after a completed assignment. The way to define how strategic a process is depends on the company and their strategy, but should take three aspects into account – the company, their employees and the end customers. The degree of process strategy can depend on any of these three actors. Empirical evidence has shown and theories confirm that core processes and processes that cut across many organizational boundaries should be considered as strategic. They have a direct effect on the basic operations of the company as a whole and also affect different organizational units and their actions. Applegate argues that IT-enabled operating processes require centralized oversight and an interfunctional, team-based approach to implementation and management (i.e. strategy) as they cut across many internal organizational boundaries (Applegate 1996). I would not limit strategic processes to only operating ones, as marketing or support and after sales processes in some service companies may be as crucial as operating ones.

Relating the processes to companies discussed in this paper:

1. The process is in no respect strategic for the company – both the company and its customers see the process (or process module) more as an annoyance than as value increasing e.g. filling in multiple copies of worksheets after an assignment in the field service company example.
2. The process is not strategic, but has some meaning to the customer – e.g. ability for Finnair's customer to order flight tickets through the Internet provided some convenience for selected customers, but generated only a fractional part of Finnair's ticket sales.
3. The process has some strategic meaning – both for the company and its customers e.g. providing web based catalogues and shopping opportunity increased selection for REI's customers, decreased REI's need to offer everything everywhere (in smaller shops) and increased their geographical presence.
4. The process is strategic – its importance is clear and implications for strategy evident. Changing it without aligning it with strategy and existing channels would provide clients and employees with confusion and have an impact on bottom line. E.g. Customer care and field service assignments in the field service company example.
5. The process is central to the strategy – strategy and the process go hand in hand and neither one can be adjusted without taking the other one into account. E.g. an established bank providing banking services through a new channel (Nordea).

The targeted process defines largely whether a company should approach it by piloting or develop a full-scale strategy. If the company's business is largely dependent on a specific process, there is no point in risking it by developing ill-defined pilots that are not in line with the company's strategy or integrated with other channels. Machine maintenance for a field service support company is a

strategic process, reporting is not. Although developing should always include processes – introducing new channels to old processes does not improve efficiency – their significance to the company and their customers should be evaluated before decisions are taken.

4.1.7 Loyalty and segmentation of customers

Loyalty and segmentation of customers is fairly easy to define. In this study segmentation refers to the situation at project introduction – one has to remember that segmentations alter as markets develop. Traditional, established companies have more loyal customers than pure players and start-ups that haven't built their customer base yet. Customers have been loyal to companies, such as retail chains or banks, but this has been questioned lately – customers are more loyal to brands than to companies. Still, having an established customer base will help companies to gain users for their new channel offers as they don't have to build the users trust to this new channel nor do they need to build the whole customer relationship again.

Segmentation is another thing as well selected and targeted customer groups provide much higher results at the introduction of new channels. Younger and technologically savvy customer segments will adopt a new channel more efficiently and therefore efforts should be placed there. Trying to offer everything for everyone rarely works, so segmentation is in many cases a pre-requisite (Applegate 1996 p. 57).

Related to segmentation, the theory of innovation diffusion helps to explain why the user groups that are to be targeted with new channels need to be well segmented. The primary interest of the theory from the point of view of the utilizing organization is to find out and explain the various contingent factors that affect the diffusion curve, i.e. the speed of adoption in an adopter population (Heikkilä 1995 p. 134). When a company can define the user group, whether an external or an internal one, in detail and especially if these users are technologically savvy (early adopters) the diffusion of this innovation is far faster and the success of the initiative is more likely.

If the company in question is looking to offer new channels for their employees, then the loyalty of their customers does not play any role. In this case companies should, when evaluating this factor, seek to assess the different user groups that might be involved. If these groups can be segmented carefully and offered value adding services cost efficiently through new channels, then the effort is more justified than trying to offer standard services (such as intranet access) to a horizontal group of employees with different needs.

In practice:

1. No loyalty or segmentation - the company has no customer base, regular customers or assessment of the customer base. In companies offering services to their employees, no segmentation or needs analysis has been made. E.g. a horizontal portal with no registration

offering new channels or a company offering intranet access through mobile devices for their employees.

2. No loyalty, some segmentation – the company has no loyal customers but has been able to segment its customers/users. In the internal example, some different needs of employees can have been perceived and can be addressed. E.g. an Internet start-up with targeted services or a company offering database access through new media to a selected group of employees.
3. Some loyalty and segmentation – customers have some brand or company loyalty and they have been segmented into broad categories. In internal services, clear inefficiencies in certain processes have been identified and their user groups documented. E.g. most Finnish retail chains at the moment.
4. Clear loyalty and segmentation – company has develop long-time relationships with its customers and segmented them appropriately. Internally, needs have been identified by a specific group of users and efficiency gains can be evidently seen. Specific services can be offered to targeted groups within the company. E.g. Finnair introducing its web services or the example company in field service automation introducing a mobile application to their service personnel.
5. Specific loyal customers can be offered new medias – a company has established almost 1-1 relationships with its customers and can interactively develop new channels for their needs. E.g. the development of mobile banking by Nordea.

Having loyal and segmented customers makes the introduction of a new channel a great deal easier and viable whether doing it by piloting or through strategy. Still, as we have seen in our real life examples, customer loyalty cannot be misused nor can it be ignored so careful consideration has to be paid. Also, as the introduction is more likely to succeed with loyal customers, it is also more likely to have a higher meaning to the company and therefore closer to their strategy. Hence I would conclude that the more loyal and targeted the attended user group is, the more the company should invest in developing a strategy for the introduction.

4.1.8 How defined is the structure of the service

The impact of how structured the planned service or process is on the success of implementation has been recorded repeatedly in the past. Mallat et al. (2001) in their report on banking services came up with a delivery principle stating that *“the more structured services the more automation can be used to deliver them”*. That is, with high structure, when less human interaction is needed, more automation can be used. The same applies to new digital channels and services in them in a slightly different way. As a service can be structured so that the user can simply go through it without excess need to write or change anything (as can be seen in comparing highly structured and unstructured service reports) the device and its limitations play a smaller role. In practice it is easier to implement structured services and processes on multi-channel environment.

1. The service is highly unstructured – the service has no structure in it, requires high degree of human interaction and innovation and does not set any limits for using it. E.g. a designer providing sketches for a manufacturing company
2. The service is unstructured – but sets limits to the form to some degree. E.g. providing feedback from customers to any kind of company dealing with consumers.
3. The service has some structure – e.g. buying products over the Internet in an electronic store: search, select, and pay – but still some degrees of freedom and choice of consumer.
4. The service is structured – low degree of human interaction needed and limits set for use. E.g. buying flight tickets over the Internet: select flight, reserve, and pay.
5. The service is highly structured – low need for human interaction, service highly structured and divided into phases, strict limits on form. E.g. paying bills over the Internet or any other digital channel.

As with segmented customers, the more structured the process is, the more likely it is to succeed in digital channels. One has to argue though, that unstructured services can and will be introduced successfully through new digital channels, but this requires that more attention has to be paid to strategy and processes. Therefore I would reason that with highly structured services and processes pilots will be successful and less structured services tilt slightly more towards strategy studies.

4.2 Division and order of factors

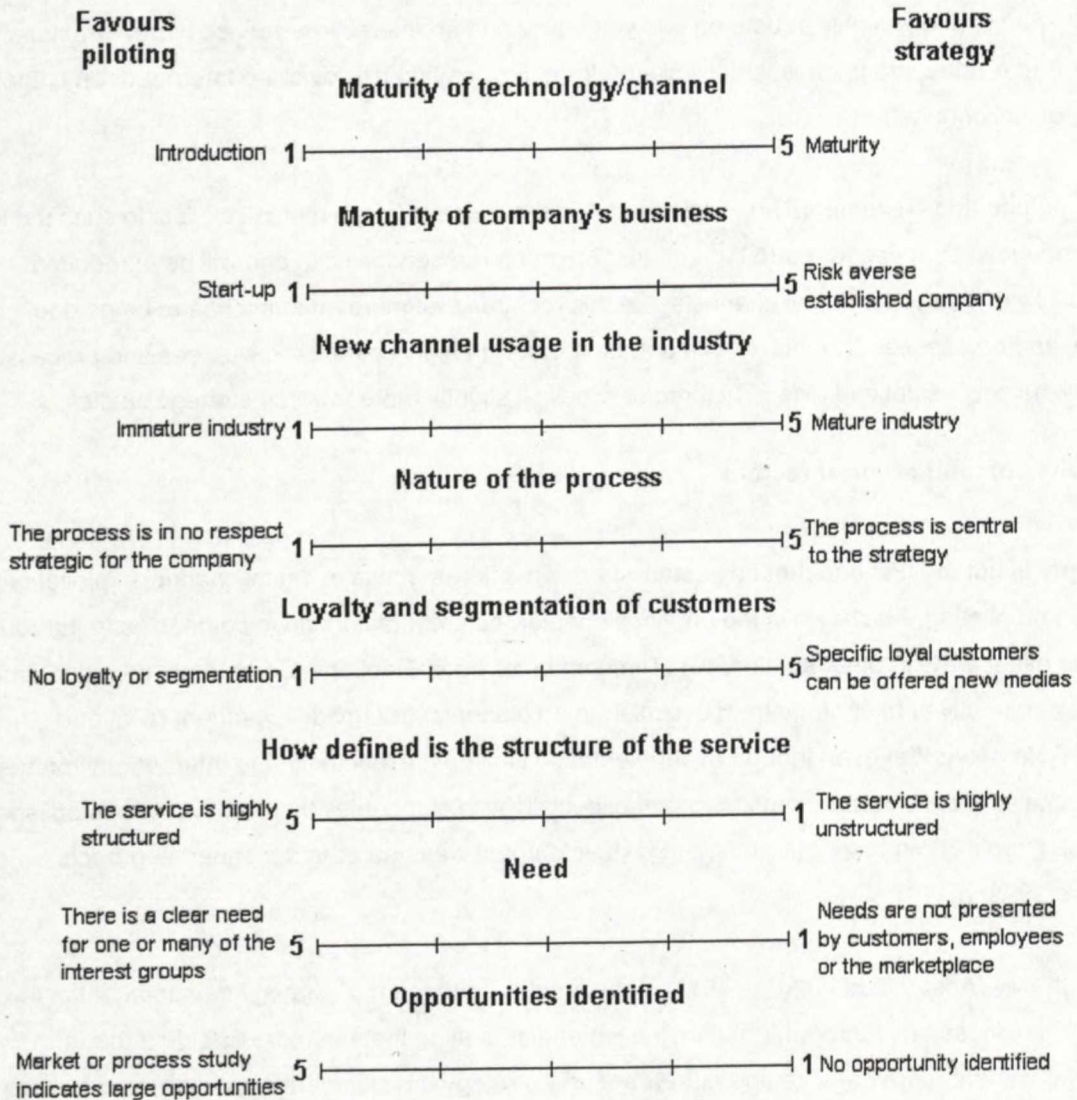
This paper is not the first one that has established two different paths to digital channel exploitation – strategy and piloting. As shown in the previous chapter, different factors drive companies to introduce channels either way. In other studies, e.g. Timmers in his book *Electronic Commerce*, provided four different perspectives to strategy from evolutionary to planned strategy development (pilot and strategy). He noted that even though experimentation is almost expected in the Internet environment, some successful case studies confirmed that especially with companies that were longer established in B2B electronic commerce Internet strategy development was nearer to a planned approach. (Timmers 1999, p.176)

Another theory (Ansoff et al. 1990 p. 46) has studied this continuum of strategy development in the context of business environment turbulence even earlier, stating that the more turbulent the environment is the more creative and entrepreneurial strategy development should be as in a more stable environment more planned approach suites better. In other words – when rapid and discontinuous changes occur in the environment, strategy needs to be re-formulated (Ansoff et al. 1990 p. 46). This may be caused by technological discoveries inside or outside the firm and/or a sudden influx of new competitors.

Both of these theories reassure the statement I made in previous chapter were the maturity of technology, company and industry (turbulence of the business environment) have an effect on whether a company should pursue new digital channels through planned strategy or through piloting.

The next table will divide the factors into ones suggesting strategy study and the ones that would favor piloting as the introduction method. NB: the impact on development method is documented in more detail in the previous chapter where these factors are introduced.

Table 5: The effect of different elements of the framework on the selection of suitable development method



4.3 Framework and its interpretation

This chapter will develop the framework into a spider web against which the factors can be mapped. It will take into account the implications of different factors on strategy and piloting and also their relative importance. Mapping all the factors into this spider web will provide the overall opportunity for the introduction (area covered) and whether it should be approached through piloting or through strategy (focal point of gravity).

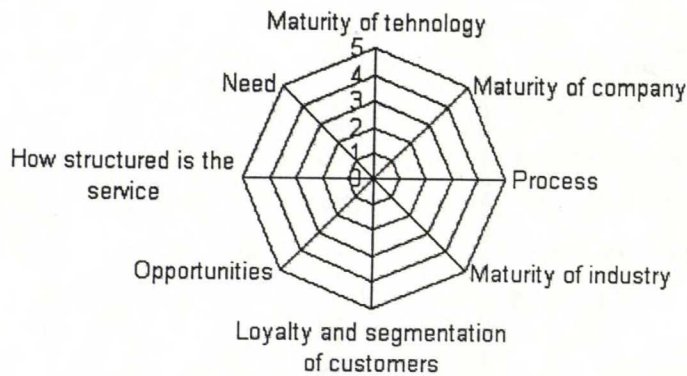


Figure 6: Spider web of the different factors

When the focal point of gravity is heavily tilted to the left and significant area is covered, a pilot project is in order. Conversely, when large area is covered and the maturities and process indicate high results, more strategic perspective is needed. When only a small area is covered, one should either postpone or reject the project or channel introduction. (See also table 3)

4.4 Other factors to consider

Customers or your employees do not view new channels as individual ways of finding information. They do not expect for you to dictate the channels that they should use under specific circumstances but want to adopt channels that provide the most convenient access for a certain situation. Therefore, in addition to the factors provided in the framework, some other factors need to be considered.

Channels need to be integrated through and into back office systems – as well as to each other. This is accomplished by providing the technological infrastructure that enables integration as well as setting up the logical infrastructure that ensures that information created and processed in individual channels is appropriately available to others. Additionally, these channels need to be consistent.

As presented in the following chapter, more careful attention needs to be paid to engagements that concern strategic processes. With these, a careful strategy alignment needs to be conducted before the implementation in order to avoid clashes with the overall strategy of the company as well as separate channels.

4.5 Portfolio of options

As has been proven throughout this paper, companies do not simply face the question whether they should introduce new digital channels, but they also need to consider how to introduce them. I have dealt with strategy exercise and piloting extensively, but two other choices are also appropriate to some circumstances. In this chapter I will go through these implementation tactics individually.

4.5.1 Reject

When no opportunities can be seen through the analysis presented in this paper, introduction should be rejected.

4.5.2 Postpone

When confronted with circumstances that promise little for either strategic or piloting tactics, companies should postpone their introduction of new channels. In addition to weak signals from all of the factors mentioned in the framework, a strong negative influence caused by one of the factors might be enough to postpone the engagement. These singular factors could be lack of need or maturity arising from the end users or customer, or a technology seen too volatile for even a pilot exercise.

Postponing does not mean that the introduction should be totally forgotten, but the team responsible for the introduction should monitor the relevant factors and carry on with the launch as factor determinants gain in maturity or opportunity.

4.5.3 Pilot

Piloting is in order especially when clear opportunities can be seen and services to be introduced are well structured but not strategic for the company. In piloting, maturity of the technology or user groups does not play an important role as the whole concept is about testing the new channel and going further with the introduction later on.

Piloting in itself is a broad concept but in the context of this study it is defined as efforts to introduce a new digital channel that do not include strategy alignment, extensive process studies or strategic processes but are targeted tests with new concepts concerning a limited user group for a certain period of time.

4.5.4 Strategy exercise

Strategy exercise is the most influencing one of these opportunities. This approach should be selected only when the introduction has an effect on strategic processes of the company and technology is mature enough so that the risk low enough.

When planning a strategic introduction, companies should look into the factors that e.g. Nordea presented in this study has dealt with when introducing their mobile banking applications. Strategy should be aligned with the engagement and its expected results, processes should be carefully examined and modified and the whole introduction needs to be designed before starting implementation.

4.5.5 Spin off

Another option available used quite extensively in the last 2-3 years is to recognize an opportunity and to establish a new company to carry on with the introduction. Main benefits from this arrive when mature companies with established market positions see an opportunity in new digital channels but do not want to risk their brand or customer loyalty by adding the channel directly to their portfolio, but want to test it under another brand to see the public's reaction. This option is outside the scope of this study.

4.6 Limitations and assumptions

The framework assumes that organisational factors do not have an effect on the outcome of the projects under study. A limitation of the empirical justification is that only one case company in one specific industry is studied and further study would be necessary to examine differences between industries.

5 Empirical justification

This section of the study will provide empirical justification for the framework that has been developed throughout this study. I will first present two introductory cases that illustrate recent examples of digital channel introductions and how the factors drawn up in this study have affected their successes. After this, I will take a closer look at the case company selected for this study. I will introduce the company and its late developments before giving an explanation on the methodology used. Then I will move on to specific digital channel introduction projects, describe them, find out their success factors through primary and secondary sources and draw up a conclusion of the cases.

5.1 Introductory cases

5.1.1 Nordea's DTV initiative

Nordea announced in June 2001 that they are developing a strategy for the introduction of DTV as a new digital channel. They will introduce the service as soon as consumers are familiar with the technology and DTV devices are common enough. They don't see Digital Television as a separate channel, but as an extension to the multi-channel palette. (Kauppalehti 28.6.2001). This announcement complies to the conditions and recommendations presented in the hypothesis part of this paper, i.e. they have loyal customers, the service is targeted to a special segment, the company is mature, the industry is mature (DTV banking services are common in the UK), they'll wait until people have enough devices (maturity of technology), need and opportunities are unclear, but the process itself is indeed strategic for a bank and the service is well structured. All of these put in the developed framework would have suggested Nordea to go ahead with a strategy and this is exactly what they are doing.

5.1.2 Sales force handheld computer pilot

At one firm, a pilot project designed to test the use of handheld computers by the sales force was so successful that it progressed through phase 2 within several months and was fully deployed within 18 months. The technology, while new to the company, was not "new to the world" (company, technology and industry maturity); the task that the technology would support was well defined (structure of the process and need), as was the influence of the technology on the task (opportunity); careful attention was paid to involving and training the users from the start of the process (loyalty and segmentation of users) (Applegate 1996, 59).

Taking these individual factors and fitting them in the provided framework would have suggested a pilot approach (and a definite go-decision) for the company – unerringly what they did.

5.2 Case company – Metso Corporation

5.2.1 Background

Metso Corporation is a supplier of processes, machinery and systems for the pulp and paper industry. The Corporation is also a strong supplier in automation and flow control solutions, and a supplier of rock and mineral processing systems.

The company has divided its operations into four key segments: Paper, Automation, Minerals and Engineering. Metso's largest customer group is the pulp and paper industry. Other significant customer sectors are the construction and civil engineering, energy, chemical, and mining industries.

Metso has its own production in 12 countries and offices in approximately 40 countries. In 2000, 47% of the Corporation's net sales originated from Europe, 33% from North America, 12% from Asia-Pacific, 6% from South America, and the rest from other parts of the world.

In 2000, the Corporation's net sales amounted to EUR 3,891 million. The Corporation employed over 22,000 persons.

5.2.2 E-Metso initiative

In June 2000, a new company within Metso Corporation started its operations. This new company was to be known as e-Metso. The objective of this initiative was to respond to the rapidly changing demands of process industry markets and to focus on the development of electronic trading. The aim was to put Metso at the forefront of traditional industry in applying e-business during 2001.

E-Metso's target was to innovate and support the integration of new and traditional technologies in Metso. E-Metso was also to optimise the development and use of resources related to electronic trading, to support the projects of the business areas and to apply leading edge solutions to the needs of the Corporation. To start the business operations, Paul-Erik Toivo was appointed President of the company.

In early 2000, the company saw that information technology, the Internet and wireless data transfer were creating new opportunities for the automation and development of process industry. Metso's customers in the process industry were going through a period of change. They were concentrating and globalising, out-sourcing their operations, and increasingly transferring responsibility for the maintenance and modernization of their machinery to business partners. Metso already had solutions in operation and the Corporation aimed to be one of the main players involved in these development trends. Strategic consultancy McKinsey developed an e-business strategy for Metso Paper in the second half of year 2000.

E-Metso was to be an integral part of Metso's business and customer service concept, and an

important factor in Metso's attempt to gain a larger share of the changing process industry markets. E-Metso's main project in 2000 was the implementation of the Pulp & Paper portal for customers in the pulp and paper industry. The pilot version of the portal was ready in December. (Metso annual report 2000)

5.2.3 Recent development

In early 2001 the structure of E-Metso was questioned and seven employees of the small unit of originally nine were transferred to the company's IT department to build a service platform for the company. Paul-Erik Toivo welcomed this move and said that the platform was to be developed by terms set by the independent business units as well as Metso's customers. Toivo is as of the beginning of 2001 the only representative of e-Metso.

(http://www.sun.fi/netatwork/2001/1/metso_print.html)

5.2.4 Methodology of the study

Empirical justification will attempt to gather a wide background of relevant information concerning the case company and especially the two projects chosen as case examples. I have personally been involved in some development projects within Metso Corporation through my work as a consultant and will use some primary and secondary data to support the conclusions that are to be made at the end of this part of the study.

I will interview people involved in the two primary Metso e-projects conducted in year 2000. I will also conduct interviews with people currently involved in digital media projects within Metso Corporation, including management level as well as project management and implementation level interviewees. These interviewees represent both, centrally coordinated units as well as individual business units involved in these development projects. The interview form is presented at the end of this study (appendix 2).

The reason why I chose to carry out qualitative instead of quantitative data gathering is that many studies have examined eCommerce project successes in general, but I wanted to get a more thorough understanding of the case company in question. Qualitative data is also more relevant to the framework of this study as the questions themselves have to be dealt with individually, keeping in mind the nature of the case company in question.

The process I chose for carrying through the case study goes as follows:

2. A meeting with the person currently responsible for Metso's digital media development projects (Vice President, e-business: Juhani Horelli)
3. Selection of case projects – validation of these and collection of background information

4. Selection of relevant interviewees – done together with Juhani Horelli and case project managers
5. Development of interview forms and interviews, arranging interviews
6. Interviews and documentation
7. Analysis of quantitative and qualitative data
8. Interpreting results together with Juhani Horelli
9. Conclusions
10. Integration of data to this study

The interview was divided into distinctive sections that represented the elements of the framework (these can be seen in the appendix). The first elements of the framework, especially maturity of the company and industry were not given that much weight in the interview, as they needed to be determined on a corporate instead of a project level. These factors were established prior to the interviews together with Metso's ebusiness manager. The interviewees were not presented with the framework before the interview took place, so that the answers would not be affected by the theory.

5.3 Case A – Pulp and Paper Portal

The purpose of Metso's Pulp and Paper portal is to evolve into a common interface for Metso's clients when dealing with different business units. Where as the Partner Web (the second case project in this study) deals with upstream partners (subcontractors etc.), the portal integrates downstream partners to Metso. Portal's focus has changed in the course of the development from providing new business opportunities and models to a more pragmatic and technology-oriented – it is seen as a place where common and existing services are provided. Another technological objective for the portal is the unification of user interface web development. (Metso portal vision statement)

On an organisational level, Pulp and Paper Portal was expected to improve the efficiency and quality of internal processes and eventually lower the walls between business units and unificate Metso Corporation. Within the pulp and paper industry, the portal was to create a network of suppliers and partners around Metso and therefore make the company a leader in an industry wide exchange. (Interviews and Metso portal vision statement)

5.3.1 Background of the project

The project was initiated in the first quarter of year 2000, when the marketing function of Metso Automation and the e-business department of Metso Corporation (e.g. Risto Lehtimäki and Juhani Horelli) began to develop a reaction to competitors actions regarding the Internet and portals for partners and customers. Main competitors' portals under scrutiny were paperloop.com (an ABB portal) and myplant.com (Honeywell portal). The main driver for this portal within Metso was Metso Automation, but early on the integration and synergy benefits of taking Metso Paper into the development were identified and a decision on the board level was made to create a common portal for these two business units. After studying different third party marketplaces and competitors

initiatives, a decision to make an independent portal was made in April-May 2000 and e-metso was born.

As the e-business strategy on the second half of that year identified that this portal should be the main initiative within e-business, strong management support was gained and the project was started in full scale.

In fall 2000 the company with its developing partners began to create a roadmap for Pulp and Paper portal development and at the same time the development of portal prototype and later on a pilot were initiated. E-Metso had the responsibility for this project and a pilot was introduced in December 2000.

In the beginning of 2001 responsibility for the portal was taken from e-Metso and given to the business units and as a result the development came almost to a complete halt. After a six month still phase (during this phase plans were modified and developed further, although no actual development took place) the development of technology for the portal was initiated again and a working first version will be introduced before the end of the year.

5.3.2 Interviewees

The interviewees in the first case project represent the deploying organisation (Metso Corporation), developing partners (Cap Gemini Ernst & Young) as well as end users of the developed channel. This mix of interviewees provides a wide and objective perspective on the success and development process of the Pulp and Paper portal. The selection represents people from high rank positions in different functions within Metso Corporation as well as end users who have been involved in the development, e.g. Vice Presidents of e-business and marketing and representatives of client organisations.

One of the interviewees had already left the deploying organisation and was so able to provide a retrospective outside view of the project. Juha Karjalainen from UPM Kymmene represented Metso Corporation's clients view.

5.3.3 Interview results

This section will provide consolidated answers and descriptive quotes of the conducted interviews.

1. Determining the success of the project

"The Pilot in fall 2000 was very successful, the objectives were met. Since then, the project hasn't really even existed" (Kalanen 2001). Although the respondents had the perception that generally the portal project has been seen as a success - their personal opinions did not reflect this view. The pilot phase in fall 2000 receives most praise, but after the handover in the turn of the year little has been accomplished.

The development has been slow and the external end customers don't see that their needs have been met. Commitment, however, has been reached and the interviewees believe in the future success of Pulp and Paper portal.

Success factors identified include for example top management awareness and commitment: *"Hey guys, you have to do this, this is important"* (Lehtimäki 2001). Also e-Metso as a compact and dedicated group had a great impact on the success of the pilot – if the line organisation had taken the responsibility, less would have been accomplished in that time frame. In summary, impressive personal achievements, prioritisation and commitment were the major success factors.

Organisational unclarity, lack of respect to external needs and a change from a business-driven to a technology-driven project are seen as the major drawbacks. When responsibility was transferred to the business units, clear handover should have been completed and developing organisation appointed. Too much time was lost in finding the right resources and thus motivation hindered. It is also difficult for the line organisation to *"reinvent themselves"* (Toivo 2001).

2. *Measuring the maturity of the chosen channel*

Web-technology is not seen as logically built as the so-called 90s technology, but the respondents saw it as mature enough. Maturity of the users is another issue: the end users as such, at least in the western paper factories, were thought to be mature users of the technology, but on a corporational level the clients were not ready for *"e-enabling"* themselves. Between industries, automation was quicker in adapting than paper industry.

The clients didn't have an outspoken demand for a portal, but after seeing the pilot quite a few of them saw its opportunities and demanded more. Summing up, the individual end users were ready to adapt to the concept of the portal - especially as the stretched development has prepared them for it. On the other hand the client companies have had difficulty in fitting the concept to their everyday operations. Some more emphasis could have been placed in creating the portal initiation together with the customers: *"Their maturity could only be guessed – we we're not allowed to consult them in the beginning of the project"* (Toivo 2001).

The channel itself, a one-to-one portal based on common web-technologies, was seen as the only and right choice, even if more development is essential.

3. *Metso Corporation's maturity in relation to the channel*

While two interviewees had an impression that Metso Corporation had enough experience with this channel before the project, most of them would have welcomed prior experience as a strength. In particular, understanding of business-to-business portals would have been essential as familiarity of basic web-technologies already existed. External client representative raised an issue of whether

Metso really knew, and do they still know, how much resources is required in order to realise the benefits of the channel.

The portal and the technology itself is fairly simple – but conceptualising and building of the needed electronic services is demanding and time consuming and requires a different skill-set than Metso Corporation's core business.

4. Pulp and Paper industry's innovativeness in using the chosen channel

This factor is closely related to the one above. Drawing the answers from the interviews together, Metso Paper is seen as a forerunner within its industry in using Internet-technology. On the other hand, Metso Automation is placed somewhere in the mainstream within the industry – a few steps behind the most advanced competitors. Some comments were raised though on the nature of competitive advantage, as a few respondents saw Metso as a forerunner in technology as such, but not able to take advantage in business sense from it: *"If were so much better, why aren't we making more money than others within the industry?"* (Toivo 2001)

In summary, innovators of the pulp and paper industry pilot the channel and some of them have already defined a strategy on how to exploit it further.

Also an indication of the maturity of industry, all of the interviewees saw that the beginning of the project took place exactly at the right time. If it had been initiated earlier, Metso Corporation or its clients would have not been ready and started later Metso would have been behind its competitors.

5. Identification of end user needs

Opinions about identification of end user needs differed significantly. Some interviewees said there had been no opportunity to directly consult end users about their needs, where as some thought that extensive emphasis had been placed in finding out their needs. A few technologically advanced clients were interviewed at the beginning of the pilot phase (in fall 2000) and the needs arrived from these were included in the development plan. This information was integrated with Metso's sales networks' experience and scope of the project in order to come up with the final specification of services. No primary or secondary market study took place.

"We didn't think through what the end users want, rather we listed the existing Internet-applications and took them to a single portal" (Kalanen 2001). Many issues were raised about the adequacy of co-operation with external clients: in the end Metso thought that they knew better what the end users want, developed it and then went and tested it with real clients. The external client consulted even noted that their needs had been presented, but Metso had neither kept up with them nor implemented them. *"Through getting our needs fulfilled, our people will get more interested and start using the portal more extensively"* (Karjalainen 2001).

End user needs can all be categorised under making paper machines more efficient. Three subcategories under this include 1) expert-services through the Internet to make Metso available 24/7 and to provide simple answers to malfunctions and efficiency questions, 2) a single and common interface to Metso from the clients' side and 3) electronic collaboration to ease documentation and the development of projects. Electronic trading and transactions, e.g. spare-parts, were placed far behind these information intensive services. *"Emphasis in the development should be placed on professional services and expert help – not on spare-parts (that is not our clients' core business)"* (Lehtimäki 2001)

6. *Identification of Metso's opportunities*

This was also a topic that divided interviewees' opinions. Current Vice President of e-business, Juhani Horelli, said that the opportunities and benefits were explored and operational and image benefits identified already at the very beginning of the project. Then again, former e-business officer Sami Kalanen expressed that real benefits were indeed identified in the beginning, but than too much focus was placed on the existing services and systems.

"This was one of those things where the rest of the world is heading that way and we have to follow" (Horelli 2001) was a descriptive comment, although the project supported Metso's e-business strategy and the Future Care-concept in an excellent way. Benefits for Metso consisted of developing closer relationships with customers, forcing Metso to develop into a more e-enabled company and reducing friction by providing a "one Metso"-image and common interface to customers. Cost cutting was also brought up as an issue.

7. *The effect on and nature of processes to be deployed through this channel*

In the first phase, the services offered through the portal are support services. At this point, exchange of information is the main purpose of the portal. In the future though, services will become more strategic and the portal will be a central medium in remote diagnostics and other main elements of the Future Care-concept. Conversely, the strategic elements of the portal are not seen as developing according to plan, especially after the emphasis shifted from business-oriented to technology-oriented.

In classifying the effect on processes, the division between technology-oriented and business-oriented mindsets came into play. *"From paper to electronic form"* and *"work as usual, using a new channel"* were typical comments arrived from technological perspectives. Acknowledging the possibility to streamline current processes followed even these comments.

On another level, people felt that the original idea was to change processes, but the handover from e-Metso to business units stalled this development. Comments like *"the original plan was to break boundaries within Metso"* (Toivo 2001), and *"e-Metso wanted to change processes but the business units were not at the same wave length"* (Fabricius 2001) reflect this notion. Despite of this, Juhani Horelli reasoned that the basics have not changed in the course of the project, although the schedule

has changed. *"The vision is that working processes will change. We have done some process development related to this in an experimental sense"*.

8. Loyalty and segmentation of customers

The selected and targeted customers have all had a long relationship with Metso Corporation. *"Unlike mainstream ebusiness; we know our customers, machines and people very well"* (Horelli 2001). These customers had been involved in previous development projects and this provided a sound basis for the integrated development of the portal.

At the beginning of the project customers weren't segmented in detail, but in the course of the development a role-set has been built and the concept has approached a situation where a one-to-one relationship is being established.

9. Definition of service structure and documentation

Within the portal, product and service structures are difficult and fairly unclear, so automation becomes complicated. It is also hard to find entry points to services. Although some areas such as service-agreement reporting are already in a certain way structured, the interviewees see that services are transforming from a free case-by-case nature to a more structured one in the future. In summary: no clear service logic exists at present, but attempts to reach one are on their way.

The services offered at the moment are technically well documented, but do not reflect business objectives or logic. The service model itself is still under scrutiny – will they be offered as a part of the service model or as separate one-time shots through the web? In summation: basic descriptions of current services exist, but the lack of a development path prevents clear business-reflected documentation of to-be services.

10. Determining the success of the chosen development method

The respondents agreed that the development method used was neither a pure pilot nor a strategy exercise. The development of the portal started with the strategy, after which the development continued with small steps: *"A pilot based on strategic grounds"* (Kalanen 2001). Much more solid business issues were included than in traditional pilot projects.

"It has been the right development method. Undeniably, a long term strategy would have assisted the project" (Osara 2001). In general the method is seen as an appropriate one, although many respondents were after more strategy formulation at the beginning: *"If it had been done in the best way, more time, energy and intelligence would have been put in strategy"* (Toivo 2001). In summary the used method was the most realistic one as results needed to be delivered and simple pilots or full-scale strategy exercises would have taken even more time.

11. Alignment with corporate strategy

The project was the most important e-project within Metso Corporation in 2000 and thus the respondents saw it as being extremely well aligned with both corporate and ebusiness strategy. *“It is an integral part of eStrategy as there are two directions in it – the Pulp and Paper portal upstream and Partner Web downstream”* (Horelli 2001).

12. Integration to other channels and systems

The portal is not yet integrated to Metso’s business – neither in technical sense (to ERP-systems etc.) nor in business sense i.e. to other channels that are used to service customers. *“It is a part of the service chain, but not yet correctly integrated. At the moment it is somewhat separate from other channels, and a mystery even for Metso’s own distribution channel”* (Lehtimäki 2001).

The importance of integration in the future is clearly seen. *“The portal has no value as a separate channel with no integration to business units core functions”* (Osara 2001). Integration is not trivial though; a lot of effort from technological viewpoint as well as training of individuals is needed to integrate the Pulp and Paper portal into everyday life of Metso and its customers.

5.3.4 Success factors and relevance to the study

Table 6: *Pulp and Paper Portal success factors integrated to the framework of the study*

Factor	Points on the scale	Comments
Maturity of the chosen channel	4	Technology and end users fairly mature, corporate level not quite ready to e-enable themselves.
Metso Corporation’s maturity in relation to the channel	3	Metso has an image of a technological innovator, e.g. second most patents pending in Finland.
Pulp and Paper industry’s innovativeness in using the chosen channel	3	Portals and other experiments on the field of e-business are familiar to the industry, but majority is still piloting these services.
Identification of end user needs	3	External customers did not express an outspoken need for a portal, but after seeing the pilot expressed more demands towards it. Customers were included in the development up to a certain level.
Identification of Metso’s opportunities	4	Operational and image benefits were identified at the beginning of the project.
The effect on and nature of processes to be deployed through this channel	2	At the moment not strategic, but in the future more strategic meaning to Metso and its customers (points 4-5).
Loyalty and segmentation of customers	5	Very long relationships and during the project, fairly detailed segmentation has been developed.
Definition of service structure and documentation	2	Currently fairly unstructured, but technically well documented. More structure anticipated in the future.

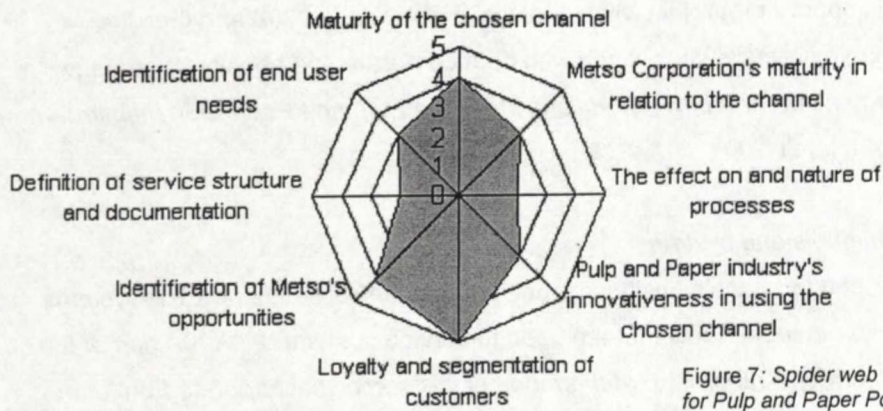


Figure 7: Spider web of the different factors for Pulp and Paper Portal

Table 4 and figure 7 describe how the project under scrutiny measures when integrated to the developed framework. The area covered in table 7 is large enough to justify the go-decision for this channel introduction. Focal point of gravity is neither on the left nor the right, so the chosen development method of a mix between piloting and strategy exercise fits the framework perfectly.

If the needs from end users would have been more explicit, the processes affected would have been supportive in nature and the service to be developed would have been well structured, a pilot would have been the best development method. Equally if the need and structure had been unknown, but the process in question had been strategic in nature a clear strategy and process study had been in place.

5.3.5 Other important factors and surprises

This section will shortly describe the outcomes of case interviews that did not directly fit into the scope of the study but should be noted in any case. No real surprises came up. Most of the comments were in the areas of organisational issues, customer relations and the general approach of Metso to technology projects.

In fall 2000 e-Metso functioned as a catalyst according to its role and achieved unrivalled momentum and pace. This catalyst rearranged priorities and as business units became aware of the importance of having a role in the development to secure future ownership, corporate management shifted control and responsibility to line organisation. Resources and finance were not secured at the beginning of this phase; the will existed with no commitment. Organisational issues and juggling of responsibility arose as areas of attention in a number of interviews.

A second issue that should be paid attention to is the nature of relationships with customers. Undeniably, long-term and close relationships exist on a corporate level, but just as in the project in question – issues tend to become technology-oriented when they in fact should be business (or indeed customer) oriented. Many of the respondents wanted to add that Metso is so stuck to technology, that the idea of having customers help in development is in reality a distant one. *“Our culture doesn't accept the idea of customers knowing better than us what they want”* (Toivo 2001). As

a solution to these issues the interviewees called after integrated customer relationship management – someone to own the customer – and thereby customer-oriented strategy and processes.

5.4 Case B – Partner Web

Partner Web has been deployed by Metso Corporation to function as a data communication network in which Metso Paper's design department, production and MRP-department as well as the different partners involved in these processes exchange information. It is based on Lotus Notes technology and links through a firewall to the use of partners. It is a technologically simple solution that provides the tools to a more efficient cooperation between companies.

Key differentiator to other similar systems according to Ismo Platan, IS Manager of Metso Corporation, is that Partner Web is based on deepening and developing the business-to-business relationship between Metso and its partners so that information is common and readily available. Traditionally these systems have focused on ordering and purchasing processes instead of real sharing of business issues. (Laitila 2001)

In addition to information sharing, Metso has plans to integrate procurement activities through the partner web in order to make this function more efficient (Saastamoinen 2001). Piloting of operative procurement is about to start in fall 2001.

5.4.1 Background of the project

Metso has been developing EDI connections with its suppliers already for more than ten years, and the idea of Partner Web was a logical continuation to this development.

The project saw its beginning some three years ago, when the initial planning took place. In summer 2000 the first version of Partner Web with some 100 external partners was already running. A stronger development begun after the pilot phase and now some 360 partners have an access to Partner Web and a second version is on the way.

5.4.2 Interviewees

Six of the seven people interviewed for this project were identified from within the organisation (different organisational units), but to provide an objective perspective, an end user from an outside organisation was also interviewed (Director Jari Kröger from Rautatyö Kröger). In order to include the viewpoints of end users, one internal and one external user were interviewed.

The interviewees' relation to the case project ranged from original developers of Partner Web to current external and internal users. All of them had been involved with the concept for at least one year and several for more than three years.

5.4.3 Interview results

This section will provide consolidated answers and descriptive quotes of the conducted interviews.

1. *Determining the success of the project*

"Yes definitely, at least from our side the project has been successful" (Kröger, 2001). The project was seen as a success by all of the respondents. As a web-based information exchange channel it is very useful and the number of active users is increasing constantly. This measure of success was seen from both sides i.e. partners and Metso's internal users.

A second phase of the project is under way though and the technologies used and concepts developed are becoming much more complex. Some issues have been on the development list for an extended time and solutions are just beginning to emerge. Also a few developers hoped for a faster development of the Partner Web.

Technologically simple solution using common technologies and developed in small steps by a focused and dedicated team comprised the success factors that the interviewees had identified. Integrated development, ease of use and simplicity were the issues that the external partner raised as success factors from their side.

No genuine factors of failure were identified, but the parallel change in technology and mode of action has caused the prolonging of the project (Poranen 2001).

2. *Measuring the maturity of the chosen channel*

"Concepts ending with the word Web raised some questions within users, but the development has aimed to a simple system and a clear structure to reduce prejudice" (Poranen 2001). Partners using the system are at different levels of maturity, but most of them are at an adequate stage. The Internet as a channel is familiar and EDI-systems have been around for decades, but combining these into an Internet-based point-to-point system has brought up various challenges.

Taking into account the geographical location (the Nordic countries) and maturity of technology, the channel has been mature enough: "A year's pilot-phase has verified this" (Saastamoinen 2001).

Other options for the channel existed; third party marketplace and message transmitters were abandoned since the products are not standardised and the business knowledge exchanged has confidential properties.

3. *Metso Corporation's maturity in relation to the channel*

"Metso Corporation has engaged in ebusiness for more than ten years (EDI) and Partner Web is a logical continuation of it" (Siltanen 2001). This is one view of Metso's maturity in relation to this channel. Still, according to the interviewees, a solid base for the channel did exist but most of the experience was really gathered on the course of this particular project. The Internet had not been used as a tool between entities earlier and the development has reflected learning-like qualities.

Knowledge of security elements has represented a technological mismatch between needs and capabilities. This will be even more crucial in the near future when more business critical information is shared between companies. In summation, the basis existed but specific experience of the channel was gathered during the development of Partner Web.

4. *Pulp and Paper industry's innovativeness in using the chosen channel*

"Current status is formed through entity – we're developing on a wide front. Some areas might be led by competitors, but as a whole Metso is a forerunner" (Poranen 2001). This quote expresses interviewees' integrated opinion – within its industry, Metso is one of the forerunners in developing electronic exchange of information.

Within the industry, innovators pilot the channel and some of them have already defined a strategy on how to exploit it further – Metso included.

Another strong indication of maturity is that the common view is that development was started at the right time, a few even called for earlier start of the current phase. Metso developed this area before competitors and the Internet-hype.

5. *Identification of end user needs*

"The development organisation has done work directly identified and requested by the end users" (Vaiste 2001). It seems that the role of end users and their needs has received major attention during this project. The development was seen by the respondents as an integrated effort of end users and Metso's IT-organisation. These end users represented the internal organisation that deals with partners and suppliers on a daily basis e.g. procurement experts.

Although the initiation of Partner Web was a result of needs presented by internal users, also external users have been a part of the development. Metso Paper's different units arrange partner/supplier-days and during these days the attendants are presented with what is being developed and asked about improvement suggestions and future plans. One external partner interviewed was very satisfied with the interaction of the development phase.

As the project has moved on training events are organised: partners have been told that Partner Web is developed according to their needs and therefore greater commitment has been accomplished. Through the development channel on this version of Partner Web, the users can give spontaneous feedback on various issues and send change requests to the developing team. In spite of this integrated development some respondents thought that in the end Metso, with its dominant position, has instructed the suppliers what they need.

"Partner Web responded to an existing user need. We needed to integrate procurement's support systems. The need was also to network with our partners" (Vaiste 2001). Integration of procurement

processes was one of the needs identified – the others were in the field of digitizing existing information to make it more readily available and easier to transfer and collaborate with. This information includes different drawings and pictures (e.g. CAD, blueprints) as well as part-lists and electronic support documentation. The objective in digitizing these is to have up-to-date information and the last revision used by different parties. Other needs acknowledged consisted of a claims-database and change management.

6. Identification of Metso's opportunities

"We knew that some benefits do exist, but did not analyze them in detail in the beginning → hard to get exact information at that phase and requires a lot of work → useless to identify in that detail?" (Saastamoinen 2001). Clear areas of benefit were identified when the decision to go ahead with this project was made. These benefits were not analyzed in that much detail though, as their clarity and the importance of the engagement overrode this. One has to bear in mind though, that this has been the first phase and future benefits will be harder to obtain. Ismo Vaiste noted this in saying that the initial benefits have been accomplished swiftly and with small effort, but from now achieving benefits will be more complex and time consuming.

Improving the exchange of information is a major benefit from Partner Web. Managing paper documentation has taken a lot of effort – opportunity to make this easier, faster, more reliable and focused has been received with thrill. Another benefit that is hard to measure in money terms is the enhancement of change management and quality of information. A few interviewees also mentioned claims-database as a benefit.

7. The effect on and nature of processes to be deployed through this channel

The services offered currently through Partner Web are support services. At this point, exchange of information is the main purpose, but the interview results show that more and more core activities will be handled through this service. *"In the near future Partner Web will included services that will effect our work procedures. Internal electronic billing will be introduced at some point. In summary, it will take on a larger role in the future"* (Poranen 2001). Collaboration and project management are seen as the first core processes affected by Partner Web.

The effect on processes separated interviewees. A couple didn't see any changes in current working processes, paper documentation is digitized and pictures are delivered through Partner Web – that doesn't change anything in Metso's working procedures. On the other hand quite a few said that the purpose of Partner Web is to change processes – and it has already done just that: *"The processes have changed a bit already and will change even more as time goes by"* (Kröger 2001). Also the fact that Metso Paper is represented as a whole entity instead of separate units has changed the way of working. During system development, some attention to process development has been paid as well.

8. Loyalty and segmentation of customers

"We've started to build Partner Web so that every individual user has a distinct profile. We know them on individual level → we offer them right services and views. Users are segmented on company and role basis" (Poranen 2001). At the moment some 360 suppliers are connected to Partner Web. Most of them have a long history and relationship with Metso.

One could imagine that segmentation has been planned and implemented successfully. On the other hand, Ismo Vaiste commented that suppliers connected have been selected randomly or on the basis of prior active co-operation – Metso has not in the end analysed who should be a part of Partner Web.

As a summary, the clients included do have a long history with Metso and they either have been or at least will be segmented carefully. Further research should be conducted among external users to verify this.

9. Service structure and documentation

"Very structured and logically organised now, as version 2 be. It standardises our processes and work procedures" (Saastamoinen 2001). Common view is that Partner Web is well structured and composes a logical entity. However, processes are built in pieces and some service chains are still incomplete. The next version will rectify these problems.

Documentation of services raised two different opinions: they are well documented or will be well documented. Most of the interviewees were though satisfied with the level of documentation.

10. Determining the success of the chosen development method

"Partner Web has been developed in small steps – a clear pilot. There has been a wider perspective on future development on the background though" (Vaiste 2001). The case project has been very much a straight pilot – or more so several pilots following each other. The respondents concur that this development method has been the right one: *"We've achieved something concrete fast. A strategic approach didn't fit the objectives, in reality it wouldn't have even been an option"* (Siltanen 2001).

11. Alignment with corporate strategy

Like the portal project, Partner Web has been an integral part of Metso Corporation's e-business strategy. The objective has been to create a closer network of partners and suppliers around Metso Paper and the developed solutions have been guided by the strategy.

12. Integration to other channels and systems

Although a few respondents saw the channel as an integrated one since the same team is responsible for partner functions in all fronts and some technological integration exists, most interviewees called for more integration to reach the intended benefits. *"The developed solution is only the beginning, some issues where integrated channel approach can be developed further are already on the horizon. Now we're dealing with a small snapshot of the channel. A long chain has to be developed so that in*

the end our customers can reach our up-stream partners" (Vaiste 2001). The channel is used beside other channels but not integrated with them. Some people use claims handling through old systems and users don't even really know what channel to use for different purposes. Also the interaction between channels is unclear.

Metso has understood that real benefits accrue when systems and channels are integrated together. No breakthroughs will be made before multi-channel integration exists. This is under development and will require substantial resources.

5.4.4 Success factors and relevance to the study

Table 7: Partner Web success factors integrated to the framework of the study

Factor	Points on the scale	Comments
Maturity of the chosen channel	4	Technology and end users fairly mature, some challenges with the point-to-point solution
Metso Corporation's maturity in relation to the channel	3	Metso has an image of a technological innovator, e.g. second most patents pending in Finland. Experience gathered through this project.
Pulp and Paper industry's innovativeness in using the chosen channel	4	Portals and other experiments on the field of e-business are familiar to the industry, but majority is still piloting these services.
Identification of end user needs	5	The needs were presented directly by end users (both internal and external)
Identification of Metso's opportunities	4	Clear opportunities were identified at the beginning, although no detailed analysis took place.
The effect on and nature of processes to be deployed through this channel	1	At the moment support processes. In the future more strategic meaning to Metso and its partners (points 4-5).
Loyalty and segmentation of customers	5	Very long and close relationships with partners. On going detailed segmentation.
Definition of service structure and documentation	4	Well structured and documented, although some service chains are still incomplete.

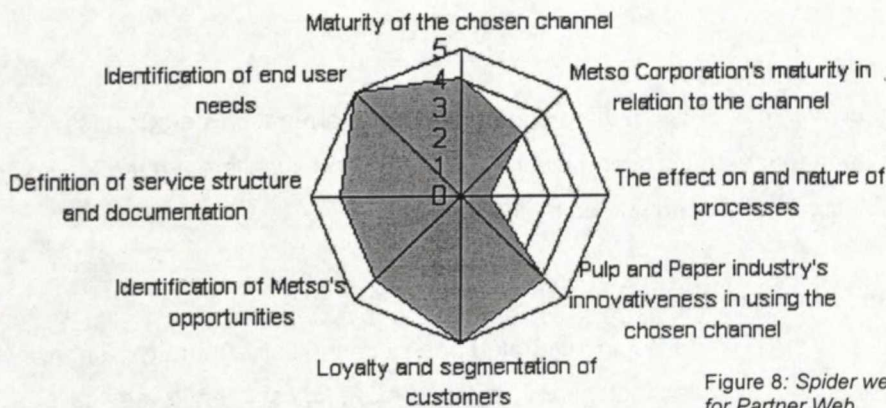


Figure 8: Spider web of the different factors for Partner Web

Table 5 and figure 8 describe how the case project can be integrated to the developed framework. The area covered substantial and clearly justifies this project. Focal point of gravity is evidently on the left,

making a pilot approach a viable one. This is exactly what has been done (successfully) and supports the developed framework.

In the near future, when Metso's maturity increases and processes involved and deployed become more strategic, the development method should include more strategic elements and process development.

5.4.5 Other important factors and surprises

This section will shortly describe the outcomes of case interviews that did not directly fit into the scope of the study but should be taken into account anyhow. Some more research on these questions could also be beneficial.

Security factors are seen as growing in importance as more core activities are deployed through Partner Web. It was also recognized that the technological development and change has been easy compared to the change in working procedures and processes – real challenges arise in these.

On a higher level, more structured and developed views on future road map were asked for. For example the procurement unit wanted to develop a complete picture of and a plan on electronic procurement activities. The late introduction of e-Strategy in Metso Paper also raised some questions, as development of electronic systems has been on going since the introduction of EDI-systems in the organisation.

5.5 Conclusions of empirical justification

The analysed interview results support the created framework significantly. In summary, the selected cases and their chosen approach were seen as viable and appropriate ones - the developed framework integrated with the interview results would have recommended these very same approaches; one between strategy and pilot for Pulp and Paper Portal and a straight forward piloting approach for Partner Web.

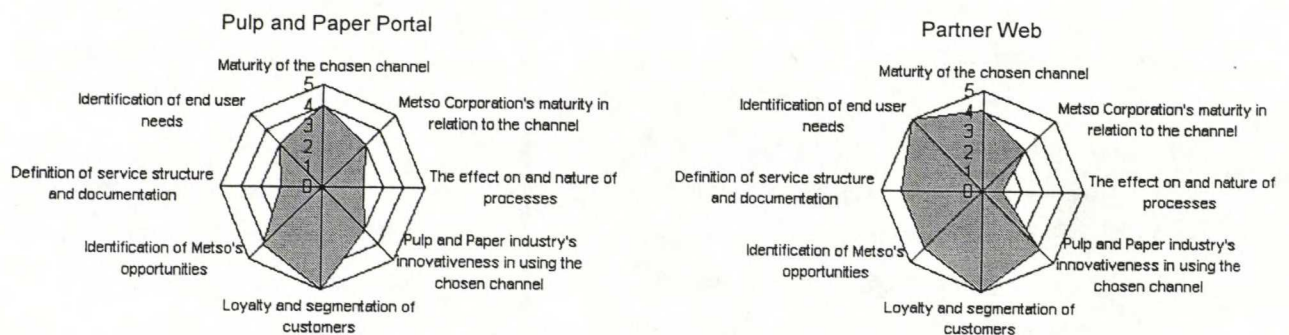


Figure 9: Comparison of frameworks and their analysis

Figure 9 shows the differences when the analysed results were placed in the developed framework. Partner Web's focal point of gravity is to the left suggesting piloting approach where as Pulp and Paper Portals focal point is in the middle suggesting a mixed approach. More detailed analysis is provided in the previous sections.

6 Conclusions

This study has roots in the uncertainty and turbulence of today's business environment. Many projects have been recently undertaken in the area of digital channels that connect employees, businesses and customers; these projects have had an impact on current business processes, client relationships and integration of separate channels. Still, companies are at present just as unsure as they were a few years ago about when, on what grounds and how they should engage themselves with these new channels. The aim of this study is to clarify these issues and create a framework to be used as a tool when the need for these decisions emerges.

The framework of the study was developed based on empirical evidence, but also more importantly based on current academic literature focusing on ebusiness and strategy. Many studies have concentrated on success factors of ebusiness projects (e.g. Tuunainen 1999, Turban 2000, Salo 2000) or the role of strategy within them (e.g. Ansoff 1990, Heikkilä 1995, Hannus 1999) and these combined with real life project knowledge created the framework based on eight factors. This framework, used as the hypothesis for the empirical section of the study comprises of factors that can be identified and measured even before the foundation of the project. This will provide the basis for decision-making on whether the new channel should be pursued and through which development method. These factors are: 1) maturity of technology, 2) maturity of company 3) maturity of industry 4) identified end user needs 5) opportunities 6) nature of the process affected 7) loyalty and segmentation of customers and 8) structure of the service. These factors analysed and placed on the framework will provide decision makers with advice on the adoption of the channel in question; if the area covered is sufficiently large the project should be initiated and the focal point of gravity points out the right way of development.

Empirical justification part introduced two projects based on different premises; one with upstream customers and impact on support processes and another one with downstream customers and planned impact on core processes. Both of the projects had been carried out by Metso Corporation in 1997-2001. The qualitative data interviews (seven per case project) identified the chosen development methods, their success and measurement against the factors introduced by the study. The hypothesis was according to the framework to recognize whether these two projects, based on the measured factors, had the appropriate opportunities and whether their development methods were in line with the ones suggested by the framework. Chapter five concludes that these projects were seen as having appropriate development strategies and that they were indeed successful; the framework came up with the same strategies justifying its correctness, i.e. the hypothesis was verified.

The study does not take into account success factors on the course of the development project – only preliminary factors are included. Also only one company within one industry was used in empirical justification and further studies should be conducted to justify the hypothesis in diverse industries. Factors that are outside of the scope of this study, but came up in the interviews and require further

study include organisational issues, relationships with customers and general approaches to technology-driven projects.

The chosen research methodology served the purpose well. Integrating existing research from two diverse areas (strategy study and technology projects) with recent empirical examples resulted in a comprehensive but simple hypothesis. The validation of this hypothesis through focused case projects and qualitative interviews gave the depth necessary for the empirical part and were better than quantitative analysis that might have resulted in more superficial results.

Although more research is needed to examine the factors outside of this study and the fit to diverse industries, decision makers should make use of this study when faced with new digital channels and decisions regarding them. It might help them in identifying and analysing the challenges that can be measured at the dawn of the project – we don't all have to learn from our mistakes. This is not a foolproof recipe for success though; careful attention has to be paid to proper project management and channel integration after opportunities are identified and the decision to enter the channel are made.

7 Sources

7.1 Publications

Ansoff, McDonnel, *Implanting Strategic Management*, 2nd edition, 1990 Prentice Hall, UK

Ansoff, McDonnel, Lindsey, Beach, *Implementing Strategic Management*, 2nd edition, 1993 Prentice Hall, USA

Applegate, McFarlan, McKenney, *Corporate Information Systems Management: text and cases*, 4th edition, Richard D Irvin, a Times Mirror Higher Education Group Inc. company, 1996 U.S.

Mallat, Dahlberg, Saarinen, Tuunainen, *Efficient service production and consumer choice of delivery*, 2001 14th Bled Electronic Commerce Conference

Earl, *Management strategies for IT*, 1989, Prentice Hall

Graham and Englund, *Creating an environment for successful projects*, 1997, Jossey-Bass Inc. Publishers, USA

Hannus, Lindroos and Seppänen, *Strateginen uudistuminen osaamisen ajan toimintaympäristössä*, 1999 HM&V Research Oy, Helsinki Finland

Heikkilä Jukka, *The diffusion of a learning intensive technology into organisations, the case of personal computing*, 1995 Helsinki School of Economics and Business Administration Publications A-104, Helsinki Finland

Kalakota, Ravi and Robinson, *e-Business; Roadmap for Success*, 1999 Addison-Wesley, Reading, UK

Kettunen and Filenius, *Elektroninen kaupankäynti – Liiketoiminta tietoverkoissa*. Teknolit Oy, Gummerus, Jyväskylä Finland

Porter, Millar, *How Information Gives You Competitive Advantage*, Harvard Business Review July-August 1985, Harvard Business School Press, Boston Massachusetts

Salo Saku, *Information Technology Enabled Change. Dramatic Improvement and Perceived Success*, 2000 Helsinki School of Economics and Business Administration Publications A-167, Helsinki Finland

Schwartz Evan I, *Digital Darwinism*, 1999 Broadway Books USA

Shapiro, Varian, *Information Rules*, 1999, Harvard Business School Press, Boston Massachusetts

Steinbock Dan, *Birth of Internet marketing communications*, 2000 Greenwood Publishing Group

Timmers Paul, *Electronic Commerce, Strategies and Models for Business-to-Business Trading*, 1999 John Wiley & Sons Ltd., England

Turban E et al., *Electronic Commerce: a Managerial Perspective*, 2000 Prentice Hall.

Tuunainen Virpi Kristiina, *Different Models of Electronic Commerce. Integration of Value Chains and Business Processes*, 1999 Helsinki School of Economics and Business Administration Publications A-153, Helsinki Finland

Weil-Broadbent, *Leveraging the New Infrastructure*, 1998, Harvard Business School Press

7.2 Reports

Bear Sterns, *Mobile Internet Overview*, February 2001

Bruton, Hannigan, Roland and Zohar, *The Dawn of Mobile eCommerce*, 1999 Forrester Research Inc.

Condon, Godell, Nordan and Omwando, *Mobile's High Speed Hurdles*, 2000 Forrester Research Inc

Condon, Leland and Nordan, *Europe's Mobile Internet Opens Up*, 1999 Forrester Research Inc.

Dahlberg, Horlück, *Internet hype overreaction – working paper*, 2001 Helsinki School of Economics and Business Administration, Finland

Dolan, McCarthy and Zohar, *Mobile Internet Realities*, 2000 Forrester Research Inc

Ghosh, Shikhar, *Making Business sense of the Internet*, Harvard Business Review, March-April 1998

Heikkilä, Kallio, Laine, Saarinen, Saarinen, Tinnilä, Tuunainen and Vepsäläinen, *Ensiaskleet elektronisessa kaupankäynnissä*, Digitaalisen median raportti 3/98. Tekes, Helsinki 1998

Kaikkonen, Törmänen: *Developing WAP banking at MeritaNordbanken*, Mobile Applications course, EVTEK 2001

Mann, *Going Mobile: It's Not Just a "Cordless Browser."* 2000 Metagroup

Metso, *Annual Report 2000*

Metso, *Technology Report 2000*

OFTEL, *Consumers' Use of Digital TV", Residential Survey*, UK Office of Telecommunications, July 2000.

7.3 Others

Cap Gemini Ernst & Young website, www.cgey.com

e-Mobile Service offering, 2000 Cap Gemini Ernst & Young

Laitila, Mikko, *Vain riskinottaja uudistuu*, Talouselämä issue 28, 31.8.2001, Talentum Media Oy Helsinki, 52-53

Lehmann, Carl, *Strategy in the Internet Age: Creating Competitive Advantage Electronic Business Strategies*, Teleconference 047, 13 May 1997, Meta Group **Metagroup**, Teleconference, "MC = EC Squared" 2000 Metagroup

Metso Corporation, public Internet site and press releases

Uotila, *Pankkipalvelut digitelevisioon todennäköisesti keväällä*, Kauppalehti issue 123, 28.06.2001, Kustannusosakeyhtiö Kauppalehti, Finland.

7.4 Interviews

Ahonen, Juha. *Purchasing Engineer*, Metso Corporation, Jyväskylä. 3.10.2001.

Fabricius, Jori. *Key Account Manager*, Cap Gemini Ernst & Young, Espoo. 25.09.2001.

Horelli, Juhani. *Vice President, e-business*, Metso Corporation, Järvenpää. 5.10.2001.

Kalanen, Sami. *Partner, technology consultant*, Steerco Oy, (Former e-Metso e-business Officer) Helsinki. 26.9.2001.

Karjalainen, Juha. *Maintenance Development Manager*, UPM Kymmene, Kajaani. 4.10.2001.

Kröger, Jari. *Director*, Rautatyö Gröger, Jyväskylä. 27.9.2001.

Lehtimäki, Risto. *Marketing Director*, Metso Paper, Tampere. 24.9.2001.

Osara, Mikko. *Development Manager*, Metso Paper, Jyväskylä. 27.9.2001.

Poranen, Aki. *Systems Expert*, Metso Paper ECC, Jyväskylä. 5.10.2001.

Saastamoinen, Ilpo. *Procurement Development Manager*, Metso Paper, Jyväskylä. 26.9.2001.

Seppänen, Pentti. *Subcontracting Manager*, Metso Paper, Jyväskylä. 3.10.2001

Siltanen, Hannu. *Vice President of Materials Management, Paper Making Machines*, Metso Paper, Jyväskylä. 3.10.2001

Toivo, Paul-Erik. *President*, E-Metso, Helsinki. 3.10.2001

Vaiste, Ismo. *Enterprise Competence Center Manager*, Metso Paper, Jyväskylä. 26.9.2001

8 Appendix 1 – development and history of digital channels

8.1 The Internet

The Internet was conceived by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969 and was first known as the Advanced Research Projects Agency Network. The original aim was to create a network that would allow users of a research computer at one university to be able to "talk to" research computers at other universities. A side benefit of ARPANet's design was that, because messages could be routed or rerouted in more than one direction, the network could continue to function even if parts of it were destroyed in the event of a military attack or other disaster. (Steinbock, 2000)

Today, the commercial Internet is a public, cooperative, and self-sustaining facility accessible to hundreds of millions of people worldwide. This development phase started somewhere in the mid 80s as companies started to see the Internet as a commercial proposition and as the control started shifting from the government and academic community to the wider public. Four distinct phases can be separated from the development of the public and commercial Internet:

1. 1986 -1994 Public Internet → traditional internet access
2. 1994 -1996 Privatization of the Internet → graphic user interfaces
3. 1996 – 1998 Commercial Internet
4. 1998 → Rise of electronic commerce

(Steinbock, 2000)

For the purpose of this study all of the above phases are considered. Most emphasis though is put on the two last phases of the Internet – Commercial Internet and the rise of electronic commerce.

8.2 Digital Television

Digital television has seen many development phases, from early disappointments to a potential future success story. Just like with the first efforts of mobile Internet (WAP), the limitations of the technology, its relative unfamiliarity and limited functionality made the path for Digital Television fairly cumbersome. A survey by OFTEL (UK Office of Telecommunications) in 2000 reported mainly traditional reasons driving adoption of digital TV, such as the wider choice of channels and programmes, rather than additional services such as Internet. Though, during August 2000 at least 1 in 10 customers claimed to have used the Internet, email and on-line shopping on Digital Television. Therefore a period of learning seems to be in place, not only for the Digital Television but digital channels in a wider sense, before real transactional functionality starts to gain ground.

We could trace the birth of Digital Television all the way back to 1972, when teletext started. For teletext, the usage is free with revenue made predominantly from advertising and the service is available almost everywhere in Europe. Next subsections will take a look at the three main phases in the development of Digital Television.

8.2.1 Phase 1 - WebTV

WebTV was one of the first entries in the much-publicized convergence of the World Wide Web with television. WebTV uses a television set as an output device; the signals arrive, however, through a modem and a telephone line at 56 Kbps.

WebTV Networks, Inc. was founded in 1995 with the mission of bringing the Internet into people's living rooms via the television. In the process, WebTV Networks created a natural expansion of the television-viewing experience that added a new dimension to how people can watch TV. The company today serves subscribers with a service that provides Internet access while enhancing the television-viewing experience.

In 1997, Microsoft Corporation acquired WebTV Networks, Inc. and now WebTV Networks operates as a subsidiary of Microsoft. WebTV Networks drives Microsoft's efforts in the television arena, with the goal being to continue expanding the traditional role of television. (www.webtv.net)

8.2.2 Phase 2 - iTV

The second phase of the development really started in 1995-1996. At that point, especially the French, British and Swedish players in the European market started to focus their efforts to establish a functioning iTV (interactive television) marketplace. These initiatives were based on mainly satellite broadcasting with cable and terrestrial following in the later years. The following picture illustrates some of the developments from 1996 onwards:

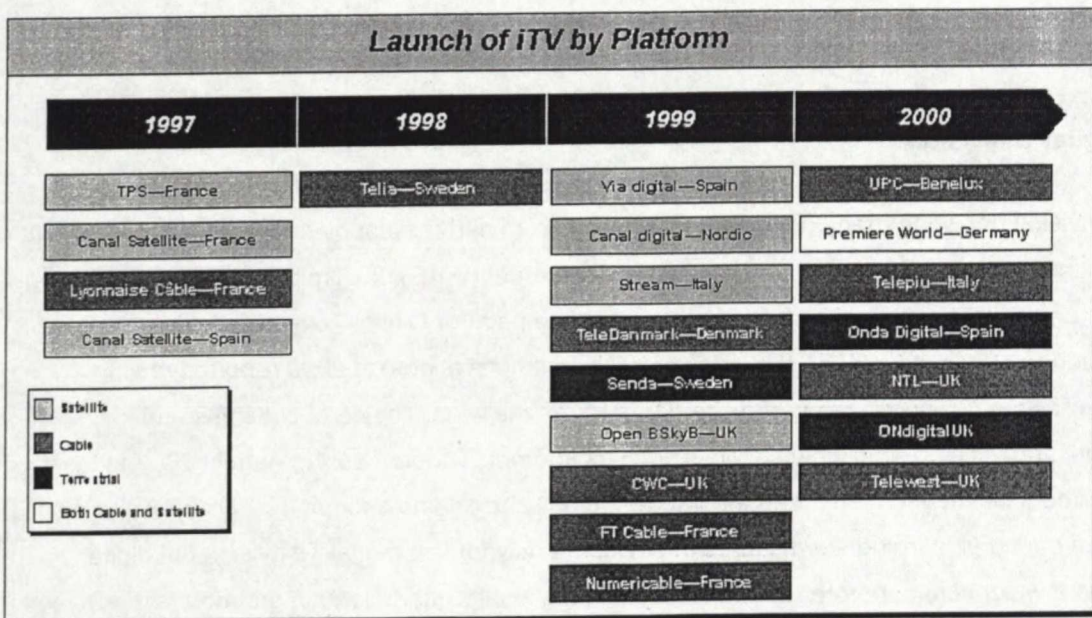


Figure 10: Development of Digital Television initiatives
Source CGEY research

8.2.3 Phase 3 - Digital Television

The latest development in the Digital Television arena has seen the merger of HDTV (High definition television) and iTV and is widely accepted as the common standard of Digital Television. This is also the case in Finland, where a few years behind Sweden, digital broadcasts are about to start in August 2001.

The following diagrams explain how the new opportunities offered by the digital television are used in the country where it has been around for the longest time, the UK.

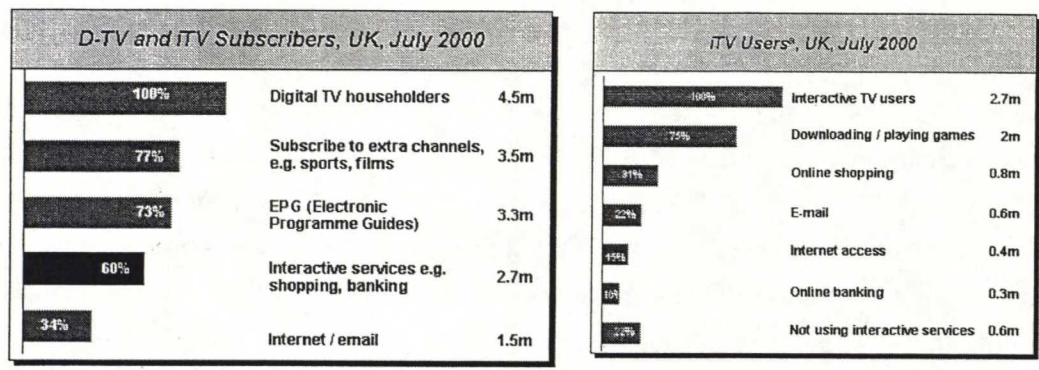


Figure 11: Consumers' Use of Digital TV
Source: Residential Survey, OFTEL, July 2000.

For the point of view of this study, the most important part is the one concerning interactive services – services provided by the companies that this study is aimed at. There seems to be a high demand for services such as banking and shopping through this channel – even higher than through the Internet. This could be explained by the familiarity of the TV set and also its pervasiveness in the everyday life. Whilst watching commercials people can tap in to the iTV-bank or shopping mall and manage their accounts or purchases.

8.3 Mobile Technology

8.3.1 Mobile data communication technology

Data communication technology has evolved through many stages. The first technologies, also known as 1st generation mobile technology, used analogue data transmission technologies. Nordic Mobile Telephony (NMT) was the pioneer of 1st generation technologies and used a low bandwidth of 450 MHz.

Soon after, the 2nd generation followed and transformed mobile communications into a commercial proposition. 2nd generation already used digital transmission and many different technologies were introduced with Global System for Mobile Communications (GSM) being the most widely adopted. Other technologies included Private Digital Cellular (PDC) in Japan and Code Division Multiple Access (CDMA) in the United States. These technologies already enabled data communication at the speed of 9.6 kbit/s and were the first that could be reasonably used to transfer IP datagrams to portable

computers. An incremental development from GSM was High Speed Circuit Switched Data (HSCSD) technology, which enabled higher speed of 14.4 kbit/s but was not conceived as very useful improvement and is offered but a few operators.

General Packet Radio Technology (GPRS) was introduced between the second and third generation and is often referred to as 2.5G. GPRS allows data transmission speeds of up to about 150 kbit/s and is actually the first technology that enables real and usable applications to be developed for business-to-business and business-to-employee uses.

3G is an abbreviation for Third Generation - the collective name used to describe mobile systems able to support a wide range of Mobile Internet services, operating with greater bandwidth. Third generation consists of different technologies, such as UMTS (Universal Mobile Telecommunications System), EDGE (Enhanced Data Rates for Global Evolutions) and others. Common for all of these technologies are, that they enable faster wireless connections to the Internet or to a company's back office systems, enabling faster and media rich services for consumers or employees. 3rd generation services are being developed now and should be available in 2002 – 2003.

4th generation mobile technologies are to be expected sometime in the latter half of the current decade, offering even faster speeds and diverse service opportunities than the previous generation.

8.3.2 Short Messaging Service

SMS (Short Message Service) is a service for sending messages of up to 160 characters to mobile phones that use Global System for Mobile (GSM) communication. GSM and SMS service is primarily available in Europe. SMS messages do not require the mobile phone to be active and within range and will be held for a number of days until the phone is active and within range. SMS messages are transmitted within the same cell or to anyone with roaming service capability. They can also be sent to digital phones from a Web site equipped with PC Link or from one digital phone to another.

SMS messages were not primarily designed to be used by consumers but by operators to send notifications and alerts to their customers. Despite of the clumsy interface and limited size of the messages, they took up in the mid 90s, especially in Finland, and started to serve as the first form of mobile data communication.

Today mobile phone users all over the world use SMS messages widely. They are also used by some operators and hardware providers to send and receive emails and the next phase of SMS messages seems to be machine to machine (M2M) communication.

8.3.3 Wireless Application Protocol

WAP (Wireless Application Protocol) is a specification for a set of communication protocol to standardize the way that wireless devices, such as cellular telephones and radio transceivers, can be

used for Internet access, including e-mail, the World Wide Web, newsgroups, and Internet Relay Chat.

The protocol consists of four layers, which are:

- Wireless Application Environment (WAE)
- Wireless Session Layer (WSL)
- Wireless Transport Layer Security (WTLS)
- Wireless Transport Layer (WTP)

The mobile phone manufacturers introduced WAP technology in 1998, but as applications and services were not ready and the protocol itself proved to be too slow and complicated, it was not adapted by consumers. Most of the phones sold today have WAP capabilities.

9 Appendix 2 – interview form

How to successfully exploit new digital channels – factors for success –Case eMetso

Name of the project: _____

Name of the interviewee: _____

Date: _____ Place: _____

Background information

1. What was your relation to this project? Did it change as the project went on?

2. When were you involved and for how long?

Determining the success of the project

3. How would you personally rate the success of the project? Is it aligned with the common impression?

4. What do you see as the main elements that made this project a success/failure?

Maturity of technology

5. Do you think that the selected channel/technology was mature enough? (i.e. was the technology itself mature enough and were the end users familiar with the channel)

6. Do you think the selected channel was the right one?

Maturity of company

7. Do you think Metso had enough experience with this channel before the project?

Maturity of industry

8. How would you rate Metso against other players within the industry in using this channel/technology?

9. Do you think this project was conducted at the right time, or was it too late/early?

Need

10. What were the needs/opportunities identified for carrying through this project?

11. Were the end users consulted about their needs?

Opportunities

12. Did you (individually/Metso) see clear benefits that could be realised through this project?

13. Was a market study carried out or secondary data used when determining the channel and the services offered?

Process

14. Was this project meant to change current working processes?

15. Was the process involved important (strategic) to the company?

Loyalty and segmentation of customers

16. How well were the end users identified (were they well targeted and selected and were they a part of the development of the project)?

17. Did the selected end users enjoy a long and well established relationship with Metso?

How structured is the service

18. Does the developed channel have a clear service chain and logic?

19. Were the processes clearly defined, structured and documented?

Determining the success of the chosen development method

20. Which development method was used in this project (pilot, strategy etc.)?

21. Did the chosen development method suite this project?

Others

22. Do you think this project was aligned with the overall strategy of the company?

23. Do you think this channel was integrated with the other relevant channels?

Do you have any other comments regarding this project?
