Distribution channel strategy design: Application and implementation in healthcare

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Abstract

Healthcare is a very important and intimate service virtually all people use at least at some occasion in a lifetime. It is also highly complex and variable with heterogeneous patients requiring individualised attention in order to be effectively treated. This requires large resources in terms of labour, knowledge, skill, and time which is why in the past, improving productivity has been difficult. Information and communications technology, ICT, has been seen to have potential to improve productivity in e.g. diagnosing, devising treatment plans, communicating with patients and clinical staff, and record-keeping if applied correctly. During mainly the 1990s, the banking sector changed its distribution channel strategy to focus increasingly on Internet banking rather than local branches. If parallels are drawn between the two, such as comparing local branches to clinics, what can a rheumatology department learn?

A case study was conducted at Karolinska University Hospital's Department of Rheumatology. Existing communication pathways associated with the clinic-patient communication were identified, theory and knowledge of the banking sector change was compiled and some current efforts of ICT integration in healthcare were briefly reviewed. Finally, the project sought to provide a future vision for communications in rheumatology. Examples of risks and difficulties considered were legal issues, patient safety and the current compensation for the clinics, which today represent a major limitation for strategy formulation.

The study identified several key issue areas to consider when implementing ICT in healthcare and the importance of aligning ICT with workflow. Parts of the banks strategic choices are also applicable in healthcare, e.g. using a multi-channel strategy where different customer segments are targeted with different channels. Further, a unified customer management system containing input from patient as well as provider is highly recommended, together with an online portal increasing accessibility for patients. Most importantly, all distribution channels and ICT systems considered for use should be thoroughly integrated with day-to-day workflow.

Key-words
Distribution channel strategy, distribution channel integration, communication, customer management, information and communications technology, healthcare
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Chapter 1

Introduction

1.1 Background

Healthcare is a very important and intimate service virtually all people use at least at some occasion in a lifetime. It is also highly complex and variable with heterogeneous patients requiring individualized attention in order to be effectively treated. This requires large resources in terms of labour, knowledge, skill, and time which is why in the past, improving productivity has been difficult. ICT has been seen to have potential to improve productivity in e.g. diagnosing, devising treatment plans, communicating with patients and clinical staff, and record-keeping if applied correctly. (Berry and Mirabito, 2009)

There have been studies focusing on how private sector developed management methods could be taken advantage of in the public sector, such as health care organisations (Currie, 1995). However, it is not certain that introducing these management methods will result in a more efficient organisation (Willcocks et al., 1997), particularly as each sector is governed by different management philosophies, policies, practices and procedures (Currie and Finnegan, 2009).

About 20 years ago, the banking sector was modernized and underwent a major change in distribution channel strategy. Traditionally, distribution of banking services has been conducted through local branches. The emergence of on-line banking reduced the attractiveness of the traditional, extensive branch networks and changed the competition structure by lowered cost of market entry for banks with no local branches according to Arbussà and Bernal (2003). The physical proximity to customers has historically provided means to gather information on financial status and perform risk valuation in e.g. lending operations but ICT improvements has reduced the importance of physical proximity by providing means of distal information gathering in a centralized and standardized manner (Arbussà and Bernal 2003).

The Internet offered a new distribution channel that made a variety of banking services available to customers 24 hours a day, where customers could get up-to-date balance information on deposit and loan accounts, transfer funds between accounts, and communicate with the bank by e-mail. Retail banks saw the new distribution channel as a way of offering lower waiting time and higher spatial convenience than traditional branch banking, making it attractive to a large and quickly growing segment of bank customers. (Mols, 1999)

Higher convenience is sought after in healthcare since inconvenient access to healthcare contributes to fragmented care, as many patients seek services from a range of sources. An especially undesirable consequence of the current healthcare delivery system is the high use of a hospital emergency room as a regular source of primary or non-urgent care.
Fragmentation has been exacerbated by office-based physicians’ slow adoption of technology that would facilitate communication of care information among medical providers. (Berry and Mirabito, 2009)

The technology is and will be a deciding factor in how healthcare is developed, organized and streamlined. Both industry and health care are seeking people with cross-border expertise in medicine, technology and organization. (CTMH, n.d.)

Clinical Innovation Fellowship, CIF, is a response to this and is a joint effort between Karolinska Institutet, KTH Royal Institute of Technology and Stockholm County Council initiated by the Center for Technology in Medicine and Health, CTMH. CTMH is a coordinating body between KI, KTH and Stockholm County Council with the aim of contributing to the development of Stockholm as a world class medical technology centre. The initiative aims to increase the number of qualified people who identify and find solutions to clinical problems. The goals are to identify potential for improvement and solving concrete problems within the clinics, create sustainable multidisciplinary networks based on clinical needs, raise awareness of clinical challenges to a wider scientific community and to train future leaders in the health care and medical research industry (CTMH, n.d.).

This master thesis is a part of CIF and will be based on the communication needs of Karolinska University Hospital’s Department of Rheumatology in Solna. Today, communication between clinical staff and patients is carried out in several different ways in addition to regular doctor’s or nurse’s appointments. These ways of communication have been growing steadily the last years and, with the work processes of today, they demand large amount of resources from the clinic while also delaying communication. The department is therefore requesting a survey analysing today’s communications channels with a view to streamlining communications practice and to ensure patient safety, and CIF seeks a future vision of distribution channel strategy to support this request.

1.2 Problem formulation

In the present situation, communication between the clinic and patient is undertaken in a variety of ways without any real hub for information and communication. Communication and information sharing can now be performed by, among other, telephone, message on voice mail, e-mail, Vårdguiden (The Stockholm Health Care Guide) and SMS. This makes it difficult to ensure that all information to / from the patient reaches the patient record and it’s time consuming to gather information from these various sources as integration tools are missing or poorly implemented. An increasingly large amount of the nurses’ time is spent on administrative tasks, which could be argued to be a result of this. It also brings about risk of losing information, possibly resulting in inconvenience or even injury to patients. A new type of case management system that takes into account the newer lines of communication should be considered in the project.

Since this case study is performed within the area of health care, not only the efficiency of communication needs to be considered but also the quality in terms of time and correctness of communication to ensure patients receive correct information regarding e.g. medication and lifestyle. It is vital that information does not get distorted.

1.3 Objective and aim

Existing communication pathways associated with the clinic-patient communication will be identified, theory and knowledge of the banking sector change will be compiled, and existing solutions such as Vårdguiden/Mina vårdkontakter and Nationell patientöversikt, NPÖ (National patient overview), will be briefly reviewed. Finally, the project seeks to
1.4. RESEARCH QUESTIONS

provide a future vision for communications in the rheumatology department. Examples of risks and difficulties that will be considered are legal issues, patient safety and the current compensation for the clinics, which today represent a major limitation for strategy formulation.

Increasing accessibility to, and availability of, face-to-face time at the clinic is a desirable outcome. In this study, this is undertaken by trying to decrease administrative work for nursing staff by reviewing current distribution channel strategy in order to discuss the possible use of an online portal and a unified customer management system.

1.4 Research questions

The study aims to answer several questions, e.g. how can communications strategy change increase efficiency and patient care quality by implementing ideas from the banking sector and what are the barriers preventing effective strategy formulation?

RQ1: How can the different means of communications be successfully integrated in a way that facilitates overview of patient information?

RQ2: How applicable is the banking sector’s channel strategy implementation? What aspects of it can be applied to the rheumatology department?

RQ3: How can an online portal, similar to e-banking services, increase health outcome for patients?

1.5 Delimitations

Similarities between the banking sector and healthcare identified are e.g. the presence of secrecy issues and exchange of sensitive information, regular contact (due to chronic diseases), poor availability at local branches/clinics, large amounts of information exchange, widely dispersed range of customers, and the need for a solid case management system.

The study is delimited to include distribution channel strategy and integration in the light of the earlier banking sector strategic changes, with focus on patient-provider communication rather than provider-provider communication. The comparison with banking sector will be delimited to ICT strategy in connection with distribution channel strategy formulation, mainly focusing on distribution channel integration. Distribution of physical treatment is not prioritized, rather the information exchange associated with treating patients.

1.6 Terminology

KS Karolinska University Hospital, located in Solna and Huddinge, Stockholm

Mina vårdkontakter (My Healthcare Contacts) is an e-service in Sweden that lets patients request, cancel, or reschedule appointments, renew prescriptions, or ask your medical centre to contact you

NPÖ Nationell patientöversikt (National patient overview)

CRM Customer Relationship Management

ICT Information and Communications Technology

EHR Electronic Health Record

PHR Personal Health Record
Chapter 2

Method

A case study with semi-structured interviews was chosen as primary methodology and data collection method, the reasons are explained further in this chapter. Interviewees contributing with contextual understanding and interviewees contributing with case-specific information are presented in Table 2.1 and Table 2.2.

2.1 Choosing methodology

There is a lot to write about epistemology and methodology, but in short, this study is performed somewhere in between positivist and interpretivism, heavily leaning towards interpretivism, almost entirely qualitative data was collected. Collected data included what communications are used today, what are the most common tasks/services offered by the clinic, perceived problems today, and similar issues.

Case studies usually focus on qualitative understanding and is most appropriate with few units of analysis, being useful for selective testing of existing theories in particular situations or circumstances (Meredith, 1998). Operations management differs from most other areas of management research by addressing both physical as well as human elements of an organisation. Case studies can be useful for testing complicated issues such as strategy implementation, and is usually performed in conjunction with survey-based research to achieve triangulation. (Voss et al., 2002)

The empirical study was undertaken during and after literature study in an iterative way, and empirical findings were then evaluated in the light of theoretical findings from the literature review. Multiple theoretical sources were used to find coherent results of studies since not many studies are performed within the Swedish healthcare system in particular. Empirical data was collected through observations and interviews, from multiple sources such as nurses, doctors, chief of administration.

The evaluation of the current state at the clinic in terms of distribution channel strategy and communications was performed in order to have a starting-point from where future vision of distribution channel strategy and distribution channel integration could be visualised. Cooperation with the clinic was vital to get reliable input, but it was important to explain that the study was aimed at helping them and their patients, not just for economic benefits for the county council.

2.1.1 Choosing the case object

Karolinska University Hospital’s Department of Rheumatology was chosen as a case object partly since it is cooperating with CTMH/CIF. Further, the rheumatology department could be seen as an organisation with less diversity in customer segments than
e.g. the primary care since the rheumatology department treats three main categories of diseases which to some extent has ready-made diagnostic and treatment plans. This standardization makes it more suitable for a comparison to the banking sector compared to the primary care. Further, since rheumatological diseases are chronic in general, the customer-base is not as varied as in non-chronic healthcare areas.

2.2 Case study

A case study was undertaken, exploring the phenomenon in question in a natural setting at Karolinska University Hospital’s Department of Rheumatology. When performing a case study, theoretical background should be well-developed when the intent is to test theory, e.g. from different fields, against empirical evidence. Theory from economics, organisation, organisation behaviour, and business strategies could be relevant to operations management studies (McCutcheon and Meredith, 1993). In explanatory case studies, hypothesis testing may involve e.g. demonstrating the applicability of a theory under circumstances not previously investigated (McCutcheon and Meredith, 1993). The performed case study did not involve hypothesis testing, rather, it involved investigating the applicability of theory and practice from another field in healthcare, not previously investigated.

Many studies included in the literature review were performed outside Sweden with different healthcare systems, which means a critical view of their results is needed. Because of this, a wide theoretical and literature base was needed to find pointers indicating that despite differences in demography and healthcare systems, the results were coherent. All literature is from developed countries to further increase validity.

2.2.1 Mapping of existing channel strategy at the clinic

Data was gathered by semi-structured and unstructured interviews with key individuals, i.e. managers or workers, generally open-ended, which is recommended for qualitative understanding. Direct observation is not very common in case studies in operations management according to Voss et al. (2002) and McCutcheon & Meredith (1993) but was in this case used to observe telephone hours where a large amount of communication took place.

In order to get comprehensive understanding of the current communication flow at the clinic, data triangulation was used in the sense that the study included interviews with nurses, specialist doctors, and chief physicians. The same method was used for the data collection, but the issues were described by employees at three different levels within the organisation.

Firstly, existing distribution channels and common services at the clinic were identified and categorised, then channels were associated with corresponding services.

2.2.2 Data collection methods

Semi-structured interviews

Semi-structured interviews were mainly undertaken to get a general view of the clinic and its workflow and communications, but also to get an overview over the strategy change in the banking sector and how it was perceived at the time. Interviewees contributing to contextual understanding are briefly presented in Table 2.1.
2.2. CASE STUDY

Table 2.1. Interviewees with indirect relation to the case study, contextual understanding

<table>
<thead>
<tr>
<th>Name</th>
<th>Organisation</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Olof Jonmarker</td>
<td>Clinical Innovation Fellowship</td>
<td>Clinical</td>
</tr>
<tr>
<td>Tobias Öhman</td>
<td>Clinical Innovation Fellowship</td>
<td>Clinical</td>
</tr>
<tr>
<td>Ulrika Henricson</td>
<td>Clinical Innovation Fellowship</td>
<td>Clinical</td>
</tr>
<tr>
<td>Sara Pütsep</td>
<td>Management consultant, Helseplan</td>
<td>Banking/Clinical</td>
</tr>
</tbody>
</table>

Interviewees at the clinic were suggested to me by the operations manager and then contacted by e-mail. Since the clinical staff at the rheumatology department had little time to spare, the interviews were kept short (15-20 min) and the interviewees had the opportunity to freely choose a time for meeting that suited them, in order to increase the response rate. Out of 10 interview requests, there were 9 respondents at the clinics. The interviewees are not linked to their responses in the report, all input was compiled into one comprehensive view of the clinics where difference of opinions or views were discussed with no linkage to names. The interview questions were divided into some straight-forward questions with simple yes/no-answers and some open questions allowing the interviewee to freely speak about their experience with different communication channels, for example. Interviewees from the clinics are presented in Table 2.2

Table 2.2. Interviewees with direct relation to the case study

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Site</th>
<th>Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lena Björnádal</td>
<td>Chief physician</td>
<td>KS Solna</td>
<td>Clinical</td>
</tr>
<tr>
<td>Lara Dani</td>
<td>Ass. Chief physician</td>
<td>KS Solna</td>
<td>Clinical</td>
</tr>
<tr>
<td>Ola Börjesson</td>
<td>Specialist doctor</td>
<td>KS Solna</td>
<td>Clinical</td>
</tr>
<tr>
<td>Viveca Roth</td>
<td>Nurse</td>
<td>KS Solna</td>
<td>Clinical</td>
</tr>
<tr>
<td>Eva-Lena Klouman</td>
<td>Nurse</td>
<td>KS Solna</td>
<td>Clinical</td>
</tr>
<tr>
<td>Susanna Farkas</td>
<td>Chief of administration</td>
<td>KS Solna/Huddinge</td>
<td>Clinical</td>
</tr>
<tr>
<td>Sofia Ernestam</td>
<td>Chief physician</td>
<td>KS Huddinge</td>
<td>Clinical</td>
</tr>
<tr>
<td>Kristina Albertsson</td>
<td>Specialist doctor</td>
<td>KS Huddinge</td>
<td>Clinical</td>
</tr>
<tr>
<td>Siv Rasmussson</td>
<td>Nurse</td>
<td>KS Huddinge</td>
<td>Clinical</td>
</tr>
</tbody>
</table>

Nurses were interviewed in order to get a view of their thoughts on e.g. telephone hours, journaling, communicating with patients and administrative tasks. At the clinic, the nurse is the first contact for every patient. The nurses perform a lot of administrative tasks and communication with patients, which is why their opinions and experience is important in this report.

Chief physicians, an assistant chief physician, and specialist doctors were interviewed to e.g. get a better understanding on their communication with patients during doctor’s appointments, common procedures, and follow-up practices.

The chief of administration at the KS was interviewed since she, like the nurses, performs a lot of administrative tasks and is also responsible for the "manual" channel integration in the sense that she, together with her colleagues, enter dictations from doctors into medical records.

The main focus of the investigation is on the department in Solna. However, the de-
department in Huddinge is also run by Karolinska University Hospital and therefore it was necessary to interview clinical staff there as well in order to propose a future vision of distribution channel strategy that would be suited for both.

Interview regarding the banking sector was performed with a management consultant who previously worked in the banking sector and now in healthcare operations.

Since the overall aim of the investigation is to solve problems at the clinic, the interviewees were mainly from the healthcare sector to find out what communications are like today. In the case of banking, most information was instead collected through a comprehensive literature review and one interview.

There are a number of issues that could cause biased results in the data collection process at the clinic. Since only a few doctors and nurses were interviewed, and they were all selected by the operations manager, their views do not necessarily reflect the entire staff’s view or the clinic’s official view. Further, since the operations manager knows who were interviewed, it could cause the interviewees to not disclose certain information on their practice if they sometimes conduct their work in a manner not fully supported by the organisation. One example of this is the issue of electronic messaging in the sense of SMS and e-mail which is not allowed for patient contact due to secrecy issues, but still is used by some of the clinical staff. At least, it was only admitted to be used by some of the staff. Partly because of this, the interviewees were not associated with their responses in the report in an attempt to entice the participants to speak freely about their experiences.

A management consultant working in the healthcare sector (Sara Pütsep) was interviewed to get information on existing solutions for distribution channel integration in healthcare, examples of patient support systems and similar. To get information on the banking sector’s background to the strategy change associated with Internet banking, and how it was perceived at the time by bankers, the same management consultant was interviewed since she was knowledgeable in that area as well. Her knowledge and experience was then added to findings from the literature review regarding the banking sector.

Documents

Documents issued by the clinic were collected and overviewed; e.g. unofficial notes from a nurse to a doctor (call a specific patient, write a prescription etc), notice of appointments sent to patients, information leaflets containing information on medication, and extracts from medical records to see layout and content. This was done in order to see what information could be conveyed using alternative distribution channels as well as how the information could be integrated in a proposed channel strategy.

2.3 Reliability and validity

The reliability for the study could be considered medium, since patients and staff change and this would most likely yield different results in another case study, but it is within the same department with similarly diagnosed patients. It is also a qualitative study rather than quantitative, further lowering reliability but instead enhancing validity.

The differences in routines and management due to different funding/reimbursement practice in Sweden compared to other countries where some previous studies are undertaken may alter the applicability and validity of the studies. The literature study could be considered reliable because of the wide theoretical base but not necessarily highly valid due to the differences mentioned.

In order to increase reliability and validity of the interviews, interviewees were not associ-
2.3. RELIABILITY AND VALIDITY

ated with their respective responses in the report, in an attempt to entice them to speak more freely on their experiences. This, since their manager knew who were interviewed for this study.

The validity is thought to be relatively high for the department in question, since the study is focused on this specific department. However, the result is still a proposed future vision rather than a definitive solution or answer to issues experienced today. The proposed model is compiled in order to support the needs of the department, further increasing the validity.
Chapter 3

Literature Review

The literature review was undertaken from an operations perspective, mainly focusing on application and implementation. Areas investigated were operations implications of the banking sector’s change of channel strategy when moving from local branches towards Internet banking, channel strategy and multi-channel integration in general, and studies on the effect of existing e-solutions within the area of healthcare. The literature review focused on general understanding (qualitative) and measurements (quantitative) to identify e.g. customer satisfaction levels in connection with ICT utilisation. The literature review chapter is divided following patterns emerging in the literature. Key concepts are service management which covers service operations and customer focused theories, ICT, and CRM. Given the uniqueness of the context, healthcare, theories developed in other areas of business were included and used to compile a model suited for the current case.

3.1 Legacy banking

Traditionally, distribution of banking services has been conducted through local branches to which primarily two types of costs have been associated; information costs and transportation costs. Information costs originate when banks seek to obtain the information they need to evaluate and monitor risk on their lending operations, and transportation costs originate mostly in the case of deposit services, since these are used more frequently than lending services. (Arbussà and Bernal, 2003)

ATMs, EFT and telecommunications were the key focus of information services in early and mid 1980s, with the role of information services and IT to support the perceived key advantages of banks: location and convenience. During the second half of the 1980s, banks had acquired powerful computers and began to look at database marketing and customer profiling as corporate culture was starting to change following development of personal computers to home users. In the 1990s, information services with decision support systems and more sophisticated database marketing tools were developed. (Nelson, 1999) The development of ATM, EFT and telecommunications significantly reduced transportation costs (Arbussà and Bernal, 2003).

Arbussà and Bernal (2003) state that the emergence of on-line banking reduced the attractiveness of the traditional, extensive branch networks and changed the competition structure by lowered cost of market entry for banks with no local branches. Physical proximity to customers has historically provided means to gather information on financial status and perform risk valuation in e.g. lending operations but ICT improvements has reduced the importance of physical proximity by providing means of distal information gathering in a centralized and standardized manner.
3.2 Distribution channel strategy

Anderson et al. (1997) argue that distribution channels in general change slowly since they are rigid and stable because of persistent inertia. The Internet offered a new distribution channel that made a variety of banking services available to customers 24 hours a day, allowing customers to view balance information on accounts, transfer funds between accounts, and communicate with the bank by e-mail (Mols, 1999). However, even though Arbussà and Bernal (2003) conclude that transportation costs were lowered by the improved ICT systems associated with Internet banking, they argue that Internet banking is not always suited for certain lending operations, e.g. where physical proximity is important to gather customer-specific information and maintaining a long-term customer-bank relationship. Arbussà and Bernal (2003) suggest that specializing in standardized services is most suitable for distribution online and that to successfully attract consumers from branches to online services, the price differential should be sufficient to cover switching costs.

The introduction of Internet banking was seen as a way of offering customers lower waiting time and higher convenience than traditional branch banking, making it attractive to a large and quickly growing segment of bank customers (Mols, 1999; Vesala, 2000; Keeton, 2001). Keeton (2001) argues that Internet banking has not yielded significantly lower fees for banking services as expected, at least not in larger banks since traditional delivery channels, costly branch networks, still are in wide use and that the large investments made in IT infrastructure and customer support caused expenses that weighed up the cost benefits. This could be seen as supported by a study performed by Baskar and Ramesh (2010) who identified the three most important Internet banking service quality factors to consider to be: online customer service quality, online information system quality and banking service product quality. The study concluded that the online service quality factors have significant impact on customer satisfaction, but that its effects varies between customer segments.

When developing a new distribution channel strategy, it is important to decide what customer segment to target. In the case of banking, Mols (1999) argues that there are two fundamentally different segments: the Internet banking segment, comprised of computer-literate persons, and the branch banking segment, comprised of mostly elderly, computer-illiterate persons, who value personal relationships higher than around-the-clock access. The latter segment is thought to prefer branch banking, but they are not necessarily less price-conscious concerning banking services. However, they might be less well-informed of the market because they do not use the Internet to the same extent as the other segment. (Mols, 1999)

These simplified customer segments gave the banks three options in the strategic distribution channel decision, target both or either one of the segments (Mols, 1999; Arbussà and Bernal, 2003). Arbussà and Bernal (2003) describe these strategy alternatives as either multi-channel strategy: offer Internet banking as an additional feature complementing the traditional branch office to retain customers who value convenience of online access (without lowering costs for the online access), or independent strategy: launch new (independent) online banks to compete with new entrants focused on online services. The banks could also choose to stick with branch banking.

A combination of multi-channel and independent strategies could offer both local branches as well as online services, with online services priced similar to the independent offensive competitors (Arbussà and Bernal, 2003; Mols, 1999). This provides for a gentle transition from branch banking to Internet banking (Mols, 1999) while keeping a good market cov-
3.2. DISTRIBUTION CHANNEL STRATEGY

It is also a less risky strategy since managers could make smaller, incremental investments in Internet banking systems while still maintaining the branch banking strategy. (Mols, 1999)

For new distribution channels to become successful, top management must pay attention to them. Management support and future orientation, i.e. the willingness to cannibalise and interest in customers who will be attractive in a year or more from now, have been found to be the most important factors in driving introduction and exploitation of new distribution channels. Willingness to cannibalise has been found to be positively related to successful implementation, but cannibalisation is a complex matter which some promote and some suggest to be avoided (Mols, 2001).

3.2.1 Multichannel strategy development

A framework for developing a multichannel strategy according to Payne and Frow (2004) is presented in Figure 3.1. The framework describes the flow in designing an integrated multi-channel strategy in general.

Develop strategic multichannel objectives

The overall objective is to provide a significantly enhanced customer experience that results in higher customer satisfaction, and increased sales, profits, and share of wallet. For example, broad objectives could be to improve customer experience, decrease operating expenses, utilise the full skills and resources of the business and its employees.

Understand customer and channel touch points to leverage advantage

The needs, wants, and concerns of customers should be the primary consideration in the design of marketing channels to identify how the touch points can be leveraged to gain advantage.

Undertake a review of industry structure and channel options

This step involves a review of the channel alternatives currently being used by the company and those used by their competitors as well as the potential for structural change. This task can be assisted with a tool called channel chain analysis that considers how a combination of channels are used at different stages of the customer interaction with their supplier.

Understand shifts in channel usage patterns

The consideration of possible channel options can be assisted by an understanding of how shifts will occur in channel usage patterns. For example, the Web and e-mail channels are growing at a much greater rate than traditional channels. An exploration of past trends and future forecast in channel usage should be considered with respect to the company’s customer segments. In addition, the relative importance of different channels...
at different customer relationship life cycle stages for the product or proposition needs to be considered. Usage of different channels by different customer segments may vary considerably.

**Review channel economics**

However, alternative channel structures and channel options have widely differing economics in terms of transaction costs, infrastructural costs, and relative usage. Not surprisingly, many businesses have rushed into the on-line channel because of its low transaction costs. However, while channel transaction costs are important, other aspects of channel economics must also be explored.

**Develop an integrated channel management strategy**

The choice of the appropriate multichannel strategy will depend upon the desired customer experience for the key target segments, the complexity of the channel interaction, and the channel economics. The economics of channels and the relative degree of use of alternative channels by different customer segments will have significantly different profit outcomes. Understanding the different profit contributions of customer segments and successfully exploiting this is a factor of superior channel management.

### 3.3 Distribution channel integration

*The multichannel integration process has a pivotal role to play in CRM as it takes the outputs of the business strategy and value-creation processes and translates them into value-adding interactions with customers. It involves making decisions about the most appropriate combination of channel participants and channel options through which to interact with your customer base; how to ensure the customer experiences highly positive interactions within those channels; and, where the customer interacts with more than one channel, how to obtain and present a ‘single unified view of the customer.’* (Payne and Frow, 2004)

Distribution channel integration is concerned with providing a common, consolidated, and real time view of the customer across all channels so the increasingly discerning and demanding customers can choose channel by convenience, regardless of consequences caused by organisational complexity concerning the information integration among the channels (Peppard, 2000). In order to decide what channels to use and in what combination, full understanding of how the channels function and their benefits and limitations in context of the company’s business situation is vital (Payne and Frow, 2004).

An example of channel integration in banking is account aggregation, an Internet banking service allowing customers to view their entire portfolio online in a unified way, including accounts at other institutions, and to shift funds in and out of different investments, regardless of what channel was used previously (Keeton, 2001).

Traditional CRM could be seen as a way of making it easier for the customer to deal with you; customers should decide how they want to transact business and their preferred distribution channel and not vice versa (Peppard, 2000). Customer value is by some considered not to be contained in one single product, rather in the understanding that a certain company or provider will offer a continuous stream of tailored products/solutions. Customer contact often occur in several different stages of a sale or transaction (pre sale, sale and post sale) which indicates that it is important to integrate these activities into different channels. (Payne and Frow, 2004) In some of the literature, distribution channels are categorized into six main categories; sales force, branches, telecommunication, direct
3.4. HEALTHCARE marketing, e-channels, and mobile channels. (Payne and Frow, 2004) These categories represent different forms of customer contact - ranging from physical to virtual. Virtual distribution channels have been argued to be more suitable for product support and simple sales while physical distribution channels are more appropriate for customers purchasing high-value, complex products (Peppard, 2000).

An effective channel management strategy therefore requires all channels to be fully integrated in order to produce an effortless sharing of knowledge about a customer’s relationship within the company. Integrated information is paramount for successful management of customer relationships and if centrally managed and enterprise-wide, able to provide customers with a consolidated view of their account across all channels and products. (Peppard, 2000) Further, the strategy must be well-anchored and supported by staff as well as management in order for the customer to get the most out of the strategy in terms of customer experience/service (Payne and Frow, 2004).

Customer understanding is integral to building strategy and infrastructure supporting customers changing needs and the organisation’s economic needs (Peppard, 2000; Payne and Frow, 2004; Hughes, 2006). Customers may wish different channels in combination to perform certain tasks, and not just separate channels for separate tasks (Payne and Frow, 2004; Hughes, 2006). Payne and Frow (2004) argue that the local branch is not dead, rather, it is changing into just another channel. Using the full range of commercially viable channels without attempting to influence the customer in channel choice is part of an integrated multichannel strategy. It is important that the organisation captures customer information across all channels and integrate it in a way that enables the organisation to recognise previous interactions with customers regardless of channel choice.

Peppard (2000) further highlights the importance of transforming customer data into actionable information, turning it into customer insight, in order to create usable customer relationships and facilitate interaction and dialogue. Today, the focus is moving from data-centric solutions to customer-centric solutions where a discrete product is no longer offered, but rather a complete outcome like a vacation instead of offering a bank loan.

3.4 Healthcare

Healthcare is highly complex and variable with heterogeneous patients requiring individualized attention in order to be effectively treated. The complexity requires large resources in terms of labour, knowledge, skill, and time which is why in the past, improving productivity has been difficult. ICT has the potential to improve productivity in e.g. diagnosing, devising treatment plans, communicating with patients and clinical staff, and record-keeping if applied correctly. (Berry and Mirabito, 2009) Rheumatological diseases affect joints, muscles, fibrous tissues and skeleton in a localized or general way, and are most often chronic.

3.4.1 ICT in Health Care

During the 1990s, public sectors were changing considerably in many developed economies through privatization, outsourcing and re-engineering of public services. Introduction of ICT tools to manage information retrieval, re-arrangement of information flows and relationships to facilitate administrative tasks were some of the most important changes. (Willcocks, 1994)

Before the application of ICT in healthcare delivery systems, some of the problems faced were the incorrect recording of diagnoses, unavailability of patient information, delays in accessing the information, space limitations for record-keeping and insufficient personnel
CHAPTER 3. LITERATURE REVIEW

for patient monitoring. The paradigm shift in health information technology has enabled a reduction in these hurdles and a more personalised service to be delivered. (Adesina et al., 2011)

Kreps and Neuhauser (2010) identified four major communication directions for designing ICT in healthcare. First, it must be designed to maximize interactive communication with users to encourage their active involvement in health care and health promotion. Second, it must be designed to work effectively and transparently across different communication platforms and with diverse populations of users. Third, it must be designed to personally engage the interests and emotions of users to promote maximum message exposure and influence. Finally, it must be designed to have broad reach across diverse populations, while at the same time adapting to the specific interests and communication orientations of different users. (Kreps and Neuhauser, 2010)

Managerial actions that have been found to hinder organisations in choosing new IS to support their objectives and strategies are mainly ineffective communication, too little involvement of stakeholders, and disorganised decision processes while organisational characteristics hindering the decision process have been found to be mainly resistance to change, lack of management support, lack of IT understanding, lack of resources, and organisation complexity. (Bush et al., 2009)

Introduction and use of the Internet as a tool in healthcare has enabled a transformation from paper-based records to electronic health records and facilitated remote patient monitoring by making medical information from health-care practitioners more accessible. (Adesina et al., 2011)

**Electronic health records (EHR)**

Electronic health records, EHR, is a clinician’s record of patient encounter-related information, managed by clinician and/or healthcare institution (Tang et al., 2006).

Staroselsky et al. (2008) highlights the importance of always keeping accurate records of the medications a patient is taking in order to deliver safe and effective clinical care, facilitating electronic decision support, quality assessment, and research. Inaccuracies in medication lists are common, mostly due to non-prescription drugs but also because some chronic prescription medications were missing in the studied records.

Further, Staroselsky et al. (2008) determine that there is a need for a new solution to support patients’ review of their medication information and integration into a physician’s workflow to facilitate accurately maintaining this vital information. EHR medication data needs to evolve to support the complexities inherent in prescriptions, medications use and its documentation. More research is needed to identify when a discrepancy between medication list and patient-report is important and when to appropriately notify someone, so as not to create a burden of unnecessary activity (Staroselsky et al., 2008).

**Personal health records (PHR)**

“An electronic application through which individuals can access, manage and share their health information, and that of others for whom they are authorized, in a private, secure, and confidential environment.” (Markle Foundation, 2003)

A personal health record, PHR, is often described as including information managed by the patient, in contrast to an electronic health record, EHR, which is usually described as a clinician’s record of patient encounter-related information. The EHR is usually managed by a clinician or healthcare institution. The PHR may include subjective or objective
It is considered important that the PHR system serves than more than a simple repository of individual health information. Patient-entered data is useful for gathering some information, but clinicians must also be able to access strict medical records containing past considerations and interpretations, as well as objective data from e.g. blood sampling in order to make clinical decisions based on those records. Reliability of patient-entered data can be discussed, but sometimes the patient is the only one who can provide certain types of health data, such as pain levels and perceived well-being. Reliability depends on the nature of the information, the patient’s literacy in general and in health in particular, and also the specific motivations for recording the data. (Tang et al., 2006)

The PHR may also be stretched to include relevant information beyond the individual patient’s personal data, such as relevant information on family members and other environmental issues that may be important to the individual’s health status. This way, a PHR may interact with EHRs with the aim of obtaining information about contagious diseases detected among family member, helping clinicians to diagnose effectively and efficiently. A related concern is how to allow individuals to specify which of their own data they will allow to be shared with other health information systems, since a fully integrated PHR system must reach across organizational boundaries to interface with multiple EHR systems. The lack of ubiquitous EHR usage currently presents the greatest environmental barrier to such integrated PHR adoption. A related problem is that EHRs must not only exist in individual offices and hospitals but must also be able to communicate with PHRs. (Tang et al., 2006)

Web-Based Patient Portals

"The patient online portal is a potentially transformative technology, offering patients unprecedented online access to health information, services, and clinical care." (Weingart et al., 2006)

Existing portals offer patients a variety of services, including Web links to reliable sources of medical information, ability to make appointments, obtain managed care referrals, request medication renewals, access to their own medical records, test results, and capability for secure messaging (Weingart et al., 2006). The websites or portals can also contain e.g. information about diagnoses, symptom management tools and information about participation in clinical trials (Caligtan and Dykes, 2011). Although the number of patient portal users is unknown, the number of potential users is large (Weingart et al., 2006).

Communication expected to be performed within the portal typically include secure e-mail, appointment scheduling (booking), and medication refill requests but could also include clinical data such as blood pressure to the provider and also allow patients to view portions of their medical records electronically (Wakefield et al., 2010) Some studies have shown that the most frequently accessed features in online portals are test results and clinical messaging and that patients are most active in the first month after enrolling and then gradually becoming more inactive. (Weingart et al., 2006) In the study performed by Weingart et al. (2006), around 25-35% still used the portal at least once a month after the first few months had passed.

In the USA, technological solutions have been implemented to enhance consumer access to EHRs and PHRs. The value of ICT and access to information is largely facilitated by the availability of e.g. wireless portable computers and smart phones. Many academic medical
centers have "tethered" PHRs that include a patient portal that provides a consumer view of information in the EHR that is maintained by the academic medical center. (Caligtan and Dykes, 2011)

**Issues and questions to consider in implementing web-based patient portals**

Wakefield et al. (2010) discussed the implementation of web-based patient portals, with the general flow of events described in Figure 3.2.

![Figure 3.2. Issues and questions to consider in implementing secure web-based electronic patient-provider communications system (Wakefield et al., 2010)](image)

**Strategic fit and priority**

How does the patient portal fit overall organisational and HIT strategic plans and priorities? How does it fit with specific short- and long-term strategic priorities? How well does the portal link to current EHR? What secure electronic communication functionality is needed to meet the strategic priorities? Who will be the primary users - all vs. specific categories of patients, providers etc? Anticipated costs of implementation? Priority and time-frame for implementation? Potential revenue stream such as fees for e-visits? Will the system provide all required functions according to "meaningful use"?

**Selection process & implementation team**

Developing a well thought out product selection process and identifying key implementation team members early is vital. Executive owner and key stakeholders must be identified early in the process and all involved must have full understanding on how the implementation of the portal fits with the organisation’s strategic priorities as well as patients’ preferences and expectations.

**Integration in patient care communications and work flows**

Implementation of a web-based patient portal potentially changes communication channels as well as work flows associated with how providers and patients communicate. Issues in this part include e.g. screening, forwarding and prioritising of e-mails (and other electronic messages) in order for providers to be able to meet the patients’ expectations in terms of response time and information sharing. It is necessary to evaluate current-state telephone communication processes, patterns and content to design future state web-based communications processes.

**Aligning organisational policies with health insurance portability & accountability act**

Implementing a secure electronic communication system (such as an online patient portal) is not enough to ensure patient confidentiality. Existing organisational policies and procedures must be reviewed and aligned with the new system in order to maintain patient confidentiality in communications between providers and patients, and between a patient’s different providers.
The implementation process requires careful planning and execution of both technical aspects as well as staff training in order to provide patients with a fully functional, secure system with adequate support in enrollment and use.

**Marketing & enrollment**

Determine which patients will be targeted to enroll in the secure messaging system, perhaps only target patients who are expected to require a long-term provider-patient relationships (chronic disease). The enrollment process should be user-friendly, efficient, and accurate and be performed over e.g. telephone, online, in person. With these ways of enrollment, accurate identification of patients is critical.

**On-going system use and performance monitoring**

Once implemented, there is an on-going need to monitor utilization and system performance as well as managing organisational resources being devoted to it. This is especially true if the communications system is seen as part of the organisation’s long-term strategy to strengthen ties with patients.

### 3.4.2 Workflow and distribution channel alignment

When introducing new distribution channels, complexities including identification and planning of organisational changes must be considered to deliver an integrated customer management tool. When new channels are introduced, existing organisational structures and processes may not be designed appropriately to take full advantage of the possibilities associated with integrated customer management. This means managers need to think twice before adding new channels such as call centres and internet access to the channel strategy and consider its impact on organisational structure and processes, as well as customer relationships. (Hughes, 2006)

The workflow models for both providers and patients are poorly understood. While informaticians have studied clinical workflow models in some settings of care, evaluations of patient work flows in homes and in the community are rare. We will have to develop an understanding of how the PHR can fit into the flow of what individuals do on a day-to-day basis. (Tang et al., 2006)

Adoption of ICT systems aimed at patient care involves transformation of medical practice in several ways, e.g. changing physicians’ relationships with colleagues and patients while also changing patient’s involvement with their own healthcare by facilitating management of chronic diseases (Berry and Mirabito, 2009). While the organisation is affected by the new technology, the technology is in its turn just as affected by the organisational dynamics where it is to be implemented. The implementation process can be seen as a process of organisational development, intended to strategically transform the organisation, allowing technology to grow along and gradually becoming a part of the basic work routines. It is vital that there is a balance between initiating organisational change with ICT as a changing agent, without attempting to pre-specify and control the process with ICT system development as basis. (Berg, 2001)

Alignment of IS with objectives and strategy has emerged as a critical issue in contemporary organisations. Executives and managers view alignment as the key to realizing the value of their information systems investments because it focuses the organization on achieving its objectives. (Bush et al., 2009) Five steps in the process of aligning information systems with organizational objectives and strategy to better realize their value
within healthcare organisations as presented by Bush et al. (2009) in figure 3.3.

Figure 3.3. Five steps in aligning IS with organisational objectives and strategy (Bush et al., 2009)

3.4.3 Patient confidentiality and integrity

As electronic information systems/records are becoming widespread, more healthcare organisations will have databases that store patient information in a common computerised format to enable data sharing over the communication network. One drawback with electronic patient information systems is their connection to the Internet, potentially making them vulnerable to unauthorised access through either 'hacking' or eavesdropping/skimming of wireless transmissions. With electronic information systems/records, a patient does not need to appear in person at a healthcare facility to access medical records, which puts extra emphasis on identification and access restrictions to ensure data security and data integrity. It is vital that both patients and health-care workers have confidence in the confidentiality and integrity of the information and data, and the security of the transmission channels. (Adesina et al., 2011)

It has been recommended in a previous study by Adesina et al. (2011) that medical data in the new technological dispensation can be secured by defining clear attributes for role-based access as the systems are put into place, developing policies to protect the patient’s right to privacy with regard to their medical data, defining the extent of medical data transmitted via the Internet from patients’ homes to the central monitoring station, and whether patients have partial or full control of their data, and specifying within data mining rules and technological measures who has the right to analyse the data.

While consumers appropriately desire protection of their private health information, aggressive protection measures might hamper e.g. PHR access by patients and clinicians and thereby impeding optimal care (Tang et al., 2006).
Chapter 4

Case object description

First, the department of rheumatology is briefly described, then existing distribution channels are presented. The descriptions in this chapter aims to support the following results and discussion. Most of the general description stems from official information provided by the hospital, while the existing distribution channels were identified and categorised following the interviews.

4.1 General description of the Department of Rheumatology

The rheumatology departments admit and treat patients with rheumatological diseases, both localised and general, which affect the joints, muscles, fibrous tissues and skeleton. The department has in-patient, day care and specialised out-patient clinics in Huddinge and Solna, in addition to primary care consultation services. It also operates an office at another hospital in Stockholm. The departments handle around 70,000 patient visits every year on the specialised out-patient clinic, 950 on a day care basis and 1,250 inpatient treatments. The department is also engaged in research, training and specialised training. (KS Department of Rheumatology, 2011)

The department of rheumatology at KS Solna is divided into six color-coded groups. In general, the groups consist of one nurse, two assistant nurses and four to eight doctors. The department’s patients are all divided into these groups so the same patient always interacts with the same group. The white group, for instance, has approximately 1200 patients associated with it. The staffing differs slightly between the groups depending on, among other factors, number of associated patients and available doctors (Interviewee, Roth; KSRheumatology, 2011). The clinic’s patients are assigned responsible doctors and nurses (patientansvariga läkare och sköterskor; PAL & PAS) which results in patients, with a few exceptions, always meet with the same clinical staff and therefore have the possibility to develop a deeper relationship. Patients may request to switch PAL or PAS if there are any issues.

The nurses are the first instance that patients meet or talk to. The nurses sort, analyse and assess how the patient is to be taken care of. Depending on what is needed, the nurses makes reservations for telephone appointments or doctor’s appointments. Patients of all ages, most people get their symptoms in middle-age. Often life-long chronic disease. In order to be treated by the clinic, a patients has to be remitted from primary care. (KS Department of Rheumatology, 2011)

There are many first-timers when it comes to patient visits, relatively few are from recurring patients which is partly a result of ”vårdgarantin” promising newly diagnosed or newly ill patients an appointment within one month. This is achieved by prolonging the time between follow-up appointments for patients currently under treatment. Further,
the symptoms patients experience are sometimes temporary and the development of new medications have enabled patients to more easily live with their condition and therefore contact the department only one or a few times per year for a follow-up appointment or prescription renewal. (Interviewee, Roth; KS Department of Rheumatology, 2011)

4.2 Existing distribution channels

Figure 4.1 depicts existing distribution channels at the clinic. The literature is focused on isolated communication methods, but this picture is instead compiled and plotted by category of communication in a hierarchical fashion.

![Distribution channels diagram]

Figure 4.1. Main distribution channel categories at the clinic

4.2.1 Visit to the clinic

In this section, only oral communication and medical treatment is included. Written information provided by patient or clinic (in some cases during appointments) is discussed in paper-based communication section instead.

Doctor’s appointment

Doctor’s appointment in this case refers to all scheduled appointments where a patient meets with a doctor.

Nurse’s appointment

Nurse’s appointment in this case refers to all scheduled appointments or appointments following doctor’s visit, where a patient meets with a nurse.
4.2. EXISTING DISTRIBUTION CHANNELS

Spontaneous visit

Some patients simply walk into the clinic and knock on a doctor’s or nurse’s door in order to establish communication. This is referred to as a spontaneous visit in this report. This is done by patients to perform tasks such as receiving information on group association, information after doctor’s appointment, time bookings, and receiving test results. A large amount of spontaneous visits are by non-Swedish speakers who have difficulties communicating over the phone. Some are also looking to get a general health care contact, even if it is not directly related to rheumatologic disorders since they already have the connection to the department. These are typically sent to the family doctor instead.

4.2.2 Telephone

Telephone hours

At the Department of Rheumatology, the telephone hours are limited to one hour per day per nurse/group. During this hour, usually 3-10 patients call in and the nurses often have time to enter information into the patients medical records. Busy days, this will take a maximum of 30 minutes in addition to the specified telephone hours. The department personnel noticed that the numbers of calls during telephone hours increased when the waiting list for a doctor’s appointment was longer than usual.

Flawed telephone exchange, nurses are unable to relay calls between groups during telephone hours, instead, the patient has to call once more if he or she pressed the wrong button when choosing group. The queue during telephone hours is deliberately set at a maximum of three patients in queue.

Voicemail

Patient to Department of Rheumatology

The departments voicemail is available to patients 7.00-16.00. The restricted opening hours for voicemail is due to the amount of calls received every day. With around the clock voicemail, the nurses would not have sufficient time to listen through all messages. For every message entered into the answering machines, a nurse analyses the content and performs the needed tasks, contacts the appropriate people if needed etc. Nurses are permitted to listen to other groups’ answering machines through their computer if needed.

The answering machines are in Huddinge divided by task. There is e.g. one for patients to request prescriptions, one for requesting test results, and one for scheduling? Patients can also leave more urgent messages if they need treatment, these messages are listened to by the nurses while less urgent messages (like prescription renewals) are dealt with by assistant nurses. The nurse’s answering machine is intended solely for these urgent calls, but the messages are usually of quite diverse nature. In Solna, there is one voicemail per group - but no categorisation of use. Usually, the voicemail messages are listened to and analysed within one or two days.

Department of Rheumatology to patient

The Department of Rheumatology can leave information to patients on test results, for instance, but only if the patient has approved it in advance.
Telephone appointment

A doctor or nurse call a patient at a pre-specified time by appointment. The department’s telephone number is hidden when making outbound calls to patients, which leads to some calls being rejected from suspicious patients.

Staff-initiated call

A doctor or nurse call a patient when a test result has come in or another development has occurred that requires patient contact. The department’s telephone number is hidden when making outbound calls to patients, which leads to some calls being rejected from suspicious patients. This type of call is unscheduled unlike telephone appointment above.

4.2.3 Electronic messaging

E-mail

Electronic messaging in the form of e-mail is not allowed for patient contact due to secrecy issues but it is used sometimes anyways. Mainly, it is used when the patient has working hours restricting contact with the department during regular office hours or if they spend much time abroad. If a doctor has received an e-mail from a patient, protocol dictates that the patient should be ignored or called back instead of answered by e-mail.

Patients can easily find out the e-mail address of their physician since they all follow the same naming scheme (<First name>.<Last name>@karolinska.se).

SMS

Electronic messaging in the form of SMS, is not allowed for patient contact due to secrecy issues but it has just been approved for e.g. sending reminders of upcoming appointments to patients using a standardised layout developed by Karolinska University Hospital. In the journaling software, TakeCare, patients can be sent SMS containing confirmation of a booked time, renewal of prescription and similar information. It is not possible today to automatically send notifications to remind patients of upcoming appointments.

Mina vårdkontakter/Online Portal

By Vårdguiden’s e-service Mina vårdkontakter, it is possible to schedule an appointment with a clinic, renew prescriptions, ask questions of medical advice or order tests and tools/aids. An individual’s medication list can be shown if logged in using e-authentication. Drug directory shows all prescription drugs that has been collected in the past 15 months. Mina vårdkontakter is not limited to Stockholm county council, county councils connected to the service are in several different parts of Sweden.

Messages through the online portal Mina vårdkontakter are approved secrecy-wise through the use of electronic identification services, such as Bank-ID, but it is by patients as well as personnel considered complicated. It is also considered quite unstable and the login using electronic identification doesn’t always work.

When a patient contacts the clinic through the Mina vårdkontakter, the person (nurse) responsible for administration of portal communication prints out the message or request the patient sent and then hands the paper over to the doctor responsible for that particular patient. This means that even though the communication is electronic, the doctor sees the communication as just another printed paper in his/her office.
4.2. EXISTING DISTRIBUTION CHANNELS

4.2.4 Paper-based communication

Regular mail

Patients can be contacted by regular mail and can also send regular mail to the clinic. For example, notices of appointments are sent to patients by regular mail, and also test results. Some patients send mail to the clinic asking for an appointment.

(Hand-)Written note

Patients can receive (hand-)written notes from clinical staff, e.g. in connection with doctor’s or nurse’s appointment. These can consist of short information on treatment and medication as well as prescription receipts.

Information leaflets

Karolinska University Hospital has pre-printed information about medicines that is given to patients when they start a new medication, for instance.
Chapter 5

Results & discussion

First, common services are presented accompanied with associated distribution channels. Second, some existing efforts in ICT in healthcare are briefly overviewed, and finally a model of how the department could proceed in designing and implementing a distribution channel strategy is discussed.

5.1 Services

The most common services at the clinic, taking up most of the clinic’s time are in Figure 5.1 categorised by how they may appear to patients. Associated distribution channels are not necessarily the only channels ever used for specific tasks, but these are the most common.

![Figure 5.1. Main service categories at the clinic](image-url)
CHAPTER 5. RESULTS & DISCUSSION

5.1.1 Appointment scheduling

Bookings, the nurse calls the patients (or vice versa) and books a time for doctor’s appointment, doctor’s telephone appointment, or nurse’s appointment. In general, it can be argued that availability/accessibility is limited at the clinic since opening hours are 8-17 in the weeks, telephone hours an hour a day, some nurses/doctors can be contacted by e-mail and some can’t.

There are political decisions affecting scheduling; a new patient is to be given an appointment within one month. There is no similar requirement for revisits or follow-up appointments. Revisits can therefore have waiting times of 3-4 months if it is not an urgent matter.

Patient-requested appointment

This subsection includes the booking of a time for a doctor’s or nurse’s appointment on a patient’s request, commonly used distribution channels are presented in Figure 5.2.

![Figure 5.2. Distribution channels associated with patient-requested appointments](image)

Today, this task is performed in several different ways depending on the patient’s needs and preferences according to the interviewed staff. One way is during telephone hours where the patient calls in to the clinic and gets a time suggested. Another way that is not approved secrecy-wise, but still used, is e-mail. The patient in this case notifies the clinic by e-mail that he or she wants/needs an appointment and the clinical staff then respond with date suggestion that the patient later can confirm or decline (staff can also call the patient back to decide on a time). Similarly to e-mail, the clinic’s voicemail can be used by the patients to leave a message requesting a time for appointment or to simply confirm or decline a suggested time. The voicemail can also be used to cancel an already scheduled appointment.

A time can also be booked by a spontaneous visit to the clinic, which according to the interviewees is mostly undertaken by individuals with language difficulties who therefore prefer face-to-face communication.

*Mina vårdkontakter* has functionality to allow patients to see what appointment times are free and to book a time of their liking, but it is not utilised at the rheumatology department at present. This functionality also allows patients to cancel appointments. With this functionality implemented and used in the normal workflow, it should decrease the amount of time spent by nurses on administrative tasks associated with appointment scheduling while also possibly reducing clinic no-show rates by allowing patients to reschedule or cancel appointments more easily.

If the clinic is to decrease time associated with administration of patient-requested appointments by offering an e-service like *Mina vårdkontakter*, success is highly dependent on achieving efficiencies through automation and self-service. (Hughes, 2006) This means that a booking made through the e-service should not be considered as an electronic message from patient to clinic that someone prints out and manages, rather, it should be tightly integrated with the staff’s time books to enable automation of the service. Further, patients must be enticed to use the new communication channel in order for it to
be utilised. In doing this, the clinic faces similar challenges to the banking sector when adopting e-banking. Operational success factors in the banking sector were found to be responsive customer service, rapid delivery of services, 24h availability of services, and e-channel specific marketing (Shah and Siddiqui, 2006).

However, since healthcare is a complex area, there are very diverse needs when it comes to patient-requested appointments. Different patients (and diseases) require different length of appointments, meaning fully automated booking systems are difficult to implement since the time required during appointments are best known by clinical staff rather than patients (or automated systems). It could be argued that for a pre-determined set of simpler tasks, patients should be able to book appointments to their liking, but for more complex issues where time consumption is harder to estimate, they are instead required to request an appointment which leads to the patient being called back by administrative personnel to schedule an appointment. The patient can’t be expected to be able to accurately determine the time needed for an appointment.

In order to succeed with the operational factors in the rheumatology department, during the implementation process the clinical staff’s approval must be gained (Bush et al., 2009) and the staff’s workflow has to be adapted to support the new system (Wakefield et al., 2010), which does not seem to be the case at present. The interviewees in general had a somewhat negative view of Mina vårdkontakter, mainly stemming from technical issues with the system and fear of not having time to login to yet another system. The patients’ view of the service was not investigated and should be further researched in the future.

**Clinic-initiated appointment**

This subsection includes the booking of a time for a doctor’s or nurse’s appointment initiated by the clinic, commonly used distribution channels are presented in Figure 5.3.

![Figure 5.3. Distribution channels associated with clinic-initiated appointment](image)

The interviewed nurses explained that the nurses of each group regularly (on a daily basis) scan printed patient waiting lists and doctor’s time books in order to book waiting patients for doctor’s appointments. Patients waiting for appointment can be either be due for follow-up or have previously requested a non-urgent time for appointment. Nurses also monitor journals for doctor input requiring attention, test results, messages from other clinical staff etc that may require a patient to visit the clinic. If the test results require urgent attention, the patient is called by the clinic to schedule an appointment.

This is a task that by the nurses is considered very time-consuming. Most work with the patient waiting list is done manually, nurses have to browse through the waiting list and book patients manually even though most revisits are scheduled in general patterns (regular visits). The patients in the list are categorised by urgency; three levels of urgency exist, and the nurses browse through the waiting list and schedule appointments by urgency and time available. When a slot in the time book has been appointed to a specific patient, a notice of appointment is sent.

This workflow indicates that the rheumatology department has a fragmented customer management system or inadequately aligned its work processes with available informa-
Further integration of channels should facilitate alignment, since the main inputs needed for appointment scheduling are from medical records (to determine urgency/priority), waiting lists, and time books. With all this information shared and integrated into one system, easily available to the nurse administrating scheduling, the system itself could (decision-support) suggest a schedule by following the same guidelines as the nurses do. This way, the nurses could simply scan through the generated upcoming schedule in order to make sure it is correct. Integrating this information, enabling automation, should allow nurses to have more time for direct patient contact where their competence is put to better use.

**Notice of appointment**

This subsection includes the notice of appointment sent out to patients when an appointment has been scheduled, commonly used distribution channels are presented in Figure 5.4.

![Regular mail](image)

**Figure 5.4.** Distribution channels associated with notice of appointment

When a patient is due for a revisit to the clinic, for the purpose of e.g. follow-up, the patient is called to the clinic through an appointment notice that is sent by regular mail (most often printed, enveloped, and sent by secretary). In case of cancellation or change of booking, the patient is not telephoned to discuss a new time if not specifically requested by the patient. Instead, a new notice of appointment is sent out with another suggested time. Patients can also ask to be put on a list to be notified by clinical staff if there are cancellations in order to get a time quickly.

In the EHR system, TakeCare, patients can be sent SMS containing confirmation of a booked time. It is not possible, however, to automatically send notifications to all patients reminding them of upcoming appointments by SMS or e-mail.

Adherence to appointments is not terrible, but could be better. Patients fail to show up for their appointments for various reasons, e.g. it has been a long time since they booked the appointment and that since then, the symptoms have disappeared. Horvath et al. (2011) studied the effect of online portal enrollment on adherence to clinic appointments and found that monthly clinic no-show rates were reduced considerably among patients registered for portal usage. Portal enrollees received e-mail reminders of upcoming appointments instead of nonusers who would have only received mail and telephone reminders. Horvath et al. (2011) conclude that new technology may have important beneficial effects on clinic operations since portal enrollment was a significant predictor of appointment arrival even after adjustment for confounding factors such as patient demographics.

In accordance to Horvath et al.’s (2011) study, functionality to increase adherence to appointments exists in the e-service *Mina vårdkontakter*. Patients registered are able to specify e-mail address and telephone number in order to be notified by a text message when they are due for an upcoming appointment. Further, patients are able to easily perform cancellation or rescheduling of previously booked appointments which should further increase adherence to appointments. However, this requires patient to manually
enter their contact details and appointment times in Mina vårdkontakter, the service is not directly linked to information available at the clinic.

### 5.1.2 Medical treatment

The clinic has chosen to divide all patients into three tracks: (early) arthritis, ankylosing spondylitis (and related disorders), and inflammatory diseases with mainly systemic components.

**Diagnosis**

This section refers to the medical examination used to diagnose patients, with commonly used distribution channels shown in Figure 5.5.

![Figure 5.5. Distribution channels associated with diagnosis](image)

In the same way there are general treatment plans, there are also standardised diagnostic steps to take with new patients. Blood samples, x-rays, clinical assessments, and patient’s stories are common inputs in diagnosing patients.

It is possible that diagnosis would be facilitated with extended channel integration, perhaps through the use of NPÖ (Nationell Patientöversikt, National Patient Overview) which provides physicians with a more comprehensive picture of a patient’s previous medical history by connecting medical records across the country? Patients may experience issues or have other diseases that affect the diagnosis in the rheumatology department.

**Treatment**

This section refers to medical treatments provided in the clinic, with commonly used distribution channels shown in Figure 5.6.

![Figure 5.6. Distribution channels associated with treatment](image)

Treatments most often they follow national treatment standards. Treatments include joint injections and medical drips. Physiotherapy and surgery are other treatments. However, they are provided by other clinics.

Some of the medications require patients to take repeated blood sampling every other week for the first three months, information about this is delivered to the patient orally as well as in writing. There are also medicines that the patients can inject themselves; an example is a biological substance that is injected into the e.g. abdomen in the same manner as a diabetic injects insulin. When patients agree to inject themselves, they are called to a nurse’s appointment for approximately one hour to go through the process. As suggested by some of the interviewed physicians, instructional videos could provide
further support for the patients if they need to remind themselves on the procedure. These videos could be linked to the patient within a hypothetical online portal, like *Mina vårdkontakter*. By ensuring the videos are linked to a specific patient profile in the portal, the clinicians can be sure the patient has the right information available at his or her discretion.

## Monitoring

Monitoring refers to the tasks associated with follow-up procedures and how to keep track of a patient’s disease progression. Commonly used channels are shown in Figure 5.7.

![Figure 5.7. Distribution channels associated with monitoring](image)

Mostly, follow-up on patients is performed during doctor’s appointments or telephone appointments and often include blood sampling and medical examination. Tests can be taken at other instances than the rheumatology department. With certain medications, patients need blood sampling every other week for three months. General (and short) information from patient on how the treatment is going, if medication has been helpful etc can be left on voicemail to nurses. The doctors don’t have telephone hours like the nurses, rather, they have a couple of hours every week dedicated to conducting scheduled telephone appointments with patients. It is during these appointments follow-up often is undertaken, where the doctor receives information from the patient on blood sugar levels, blood pressure, and other key figures that may carry clinical relevance.

According to interviewed physicians, some patients with chronic conditions monitor their disease themselves by e.g. keeping track of blood pressure, blood sugar, and pain levels during the time between doctor’s appointments. This information is then showed to the physician during visits to the clinic to provide a good overview of developments. There is, however, no standardised template for this issued by the clinic which results in diverse presentation of the figures. Some of the interviewed physicians recognised this type of logging as positive in terms of facilitating diagnostics and overview of patient health, but that it’s use is dependent on what disease a patient has. It was also by some of the interviewees considered positive if the patient kept some kind of record on what medication and how much was used since the last visit. The main reason for the positive feelings toward patient self-monitoring is that physicians are able to get a more objective view of the patient’s health than what is sometimes achieved during a short interview in the beginning of a revisit.

When patients with rheumatoid arthritis arrive at the clinic before a scheduled appointment, they are asked to enter information similar to the above into a computer connected to "RA-registret" (Rheumatoid Arthritis register), which is a national register in Sweden where treatment and course of the disease is registered. Examples of patient input could be pain levels and general well-being to see how the disease affects the patient’s everyday life. According to some of the interviewed physicians, mainly younger people are interested in being involved in their treatment and keeping personal records. The "RA-registret" is meant to act as support for both patient and provider at follow-up visits, where the course of the disease can be monitored over time. With the register, the medical advantages are that it is possible to see patterns in the disease and how the patient is
responding to medication and treatment; while the patient has the opportunity to see the
effect of treatment and accompanying figures and diagrams. This is coherent with what
Ancker et al. (2011) and Berry and Mirabito (2009) state; that improving patient’s access
to health information and their communication with providers are important steps toward
health promotion, self-management of disease, and shared medical decision-making.

With electronic registries of patients with chronic diseases, the clinical staff could monitor
patients and intervene when they are overdue for care or are not progressing according
to the treatment goals, or when relevant new information becomes available. (Berry
and Mirabito, 2009) For a patient with a chronic disease, widespread use of ICT, EHRs,
and PHRs could mean improved understanding of therapy schedule, documentation and
management of side effects, and enhanced interaction with the care team to continually
tailor care and participate in shared decision-making. (Caligtan and Dykes, 2011) In
rheumatology, the clinicians suggested that these registries could include information on
e.g. pain levels, blood pressure, and blood sugar since cortisone injections are common
during treatment, and are known to sometimes cause diabetes-like symptoms.

Interviewee Pütsep suggested that with electronic registries, additional services could be
developed to enable patients to use smart phone applications or web-based services to
facilitate and encourage regular monitoring. If patients are to be motivated to regularly
monitor their condition, it must be a low-hassle solution. Like banks have smart phone
applications enabling customers to transfer funds, pay bills, and perform similar tasks
on the go, clinics could have similar applications where patients can access their medical
history, treatment plans and make their own monitoring inputs. This have the potential
to attract younger patients, since these are usually most interested in being involved in
their treatment according to some of the interviewed physicians, and are also in general
familiar with smart phone applications.

By focusing on involving patients and providers in the design of similar systems, there is a
potential to dramatically improve health outcomes for diverse populations. The systems
should be designed to enable seamless use across organisations and populations, there
should be engaging and motivating communication programs, and integration of high
touch and broad reach. (Kreps and Neuhauser, 2010)

5.1.3 Providing information

In addition to information provided by the clinic, Stockholm county council is running an
e-service where administrative and medical information can be found, called Vårdguiden.
On Vårdguiden.se, medically-reviewed information on diseases and health can be found.
Further, addresses and phone numbers of all health care centers in Stockholm County are
listed. There is also question-answering services where one can ask anonymous questions
to experts in health care. Vårdguiden.se is available in a version adapted for mobile
phones, on Facebook, and through their blog.

Administrative information

This section refers to activities like providing information about the clinic, providing
various certificates, and similar. Commonly used distribution channels are shown in Figure
5.8.
This category includes the provision of information to the patients on what group a new patient will be associated with, how to get in contact with the group and who will be his or her doctor and nurse. This information can also consist of the clinic’s opening hours, information on communication channels like voicemail and telephone hours.

This category also includes medical certificates, travel certificates, aid certificate, as well as administration associated with sick leave/sick-listing. Medical certificates require a visit to the doctor, but can be extended/renewed by phone if there are no empty slots for a revisit. It’s not uncommon, according to interviewees, that requested certificates are forgotten by clinical staff, mainly due to stress levels, requiring patients to call back once more which further affects the staff’s work load. The e-service *Mina vårdkontakter* also has functionality for renewing e.g. aid certificates, but it is not implemented at the clinic yet.

By facilitating communication of administrative information, e.g. allowing people to view opening hours, contact details to their specific group online if they have forgotten, time is freed at the clinic that can be used to examine and treat patients in need of care instead of using it to repeat static information. Today, patients are already able to view opening hours and telephone number to the telephone exchange at Karolinska University Hospital’s web page or on Vårdguiden.se. However, there is no way for patients to look up what group they are part of online. This could be an issue since the telephone exchange require patients to select group, and the nurses are then unable to relay calls between groups if the patient made the wrong selection. This simple information could be displayed in an online portal, together with an overview of the the patient’s health.

**Medical information**

Medical information refers to tasks associated with providing information on medication, treatment plans, and similar. Commonly used distribution channels are shown in Figure 5.9

Doctor’s brief patients on the diagnose and its implications, treatment plan, medication etc during appointments. KS has standardised information leaflets describing medications; side effects, expected outcomes, how often they should be taken, how often repeated blood sampling is needed etc. What information is provided depend heavily on if the patient is newly diagnosed or a recurring patient with better understanding on medication.

In Solna, nurses provide patients with more elaborate information after a doctor’s appointment. This includes information on e.g. treatment plan, how symptoms can be
5.1. SERVICES

kept under control, expected effects and side effects of medication, and also perform further tests (blood samples) to further pin-point diagnosis and decide on medication. When medication is decided, nurses inform patients on when to take them etc. In Huddinge, this more elaborate information is given by the patient’s doctor during the initial appointment.

However, it is often difficult for the patient to absorb the large amount of information needed, especially when they have just been diagnosed with a chronic condition. This results in patients sometimes book a scheduled telephone appointment with a doctor after a week or two when they have digested the diagnose/news. The clinicians have found that it is often easier for the patients to absorb information on diagnosis, prognosis, and medication when they have had time to think about their situation. Sometimes, these appointments are performed at the clinic rather than by telephone for two main reasons; the patient may prefer to get the information in person, or the clinic prefer to book an appointment at the clinic since that has different reimbursement than telephone appointment. If a patient has forgotten parts of the treatment plan or medication instructions and there is no dictation available that the nurses can extract the information from, the doctor has to be notified.

In a large retrospective study of portal use at a network of federally qualified health centers in USA, Ancker et al. (2011) found differences in portal access and use on the basis of race, ethnicity, sex, language, insurance type, age, and health status. Racial and ethnic minorities and non-English speakers were generally less likely to use an online portal. Further, they conclude that for most patients, the care providers are likely to be the ones who introduce them to online portal and interest them in its use, and changing provider behavior may be an effective way to increase patient engagement. A general finding in the study was that patients with chronic conditions were more likely to use the portal which suggests that a well-developed portal could be a successful development for promoting patient-involvement in the treatment process within the rheumatology department which mainly treats chronic conditions.

This is further determined by Ossebaard et al. (2012), who conclude that patients with long-term conditions, and their carers, expect support from a governmental website to support information gathering about the condition. Patients expect tailored and in-depth information instead of general information. However, their study showed that only approximately 40% of the patients reviewed would rely on online information for personal health decisions and that portals as a tool for empowerment and decision making has little use to most participants at present. Ossebaard et al. (2012) also note that the distrust of online information is likely to decrease with increased personal experience with the portals and that it is difficult to develop a general portal that would suit all patients. Many specialised patient sites arise in response to specific information needs, and the role of participative applications increases. (Ossebaard et al., 2012)

But in order to be useful to the patient, the PHR connected to the portal, must present data and accompanying tools in ways that enable the individual to understand and to act on the information contained in the record. Widespread adoption and use of PHRs will not occur unless they provide perceptible value to users, are easy to learn and easy to use, and have associated costs that are easily justified related to the PHR’s perceived value. One of the most important PHR benefits is greater patient access to a wide array of credible health information, data, and knowledge. Improved communication will make it easier for patients and caregivers to ask questions, to set up appointments, to request refills and referrals, and to report problems. All the advantages of PHRs for providers depend on the PHR being integrated with the provider’s EHR, (Tang et al., 2006; Kreps and Neuhauser, 2010) which is not entirely true of today.
Test results

This section refers to activities associated with providing patients with the results of e.g. blood sampling. Commonly used distribution channels are shown in Figure 5.10

![Distribution channels associated with providing test results](image)

When a test result is available to the clinical staff, nurses act on it and perform the necessary action. This could be to contact the patient and present the results, contact patient to book a revisit to the clinic, or discuss it with patient responsible doctor. The information (the test result) is delivered to the patient through telephone mainly, and in some cases by voicemail if the patients has approved the use of voicemail in advance. A patient can also call in and ask for the results if the clinic has not yet had time to deliver the results. Test results could also be discussed between doctor and patient during a scheduled telephone appointment.

With a patient portal, test results could be conveyed using SMS, e-mail or directly through the portal. At least a notification could be sent to the patient telling them there is a result available and that the patient can call the clinic for further information.

Prescription renewal

This section refers to the activities associated with a patient requesting and the clinic providing prescription renewals. Commonly used distribution channels are shown in Figure 5.11

![Distribution channels associated with prescription renewals](image)

In the EHR system, TakeCare, patients can be sent SMS containing confirmation of renewal of prescription and similar information.

Prescription renewal is usually performed directly during a doctor’s appointments, usually a patient is prescribed enough medicine to last until next revisit. If a patient needs renewed prescription in advance of scheduled appointment, due to e.g. change in symptoms or increased pain, the patient calls a nurse during telephone hours and the nurse makes sure a prescription is renewed. Newly developed and expensive medicines are only prescribed 3-4 months at a time, while the more common medicines can be prescribed for a year each time. When a prescription is renewed, the patient gets a receipt/note to remind him/her of what medication it is and how many times it can be collected/filled. The prescription itself is electronic, which means the patient can simply walk into a pharmacy and show ID to get the correct medicine.

At present, patients are not able to request prescription renewal through *Mina vårdkontakter* but its implementation is undergoing.
5.2 ICT INTEGRATION EFFORTS

5.1.4 Miscellaneous

There are of course other tasks performed at the rheumatology department, for instance answering patients’ queries on other medical topics unrelated to rheumatology. These questions are usually referred to primary care, but sometimes also handled by the department.

There are several possible reasons for this; it could be difficult for patients to determine/know what exact symptoms are suitable for treatment at the rheumatology department and what should be dealt with in the primary care, it could be due to difficulties in contacting primary care or connected to poor accessibility of healthcare as mentioned by Berry and Mirabito (2009).

Perhaps this could be solved by the county council by providing more easily-accessible information on how to seek care. There is a lot of information online on how to seek care, and even nurses in a telephone service that can help out, but it may not be promoted enough to be commonly known among the population.

5.2 ICT integration efforts

5.2.1 Nationell Patientöversikt

The service Nationell patientöversikt (NPÖ) allows qualified caregivers to, with the patient’s consent, access medical records filed with other caregivers. This provides an opportunity to coordinate care measures by providing a comprehensive picture of each patient, resulting in better basis for diagnosis, treatment, and monitoring.

This leads to improved quality of care thanks to a whole picture of the patient, less costly and time-consuming duplication, and better joint planning and coordination between care providers. NPÖ indicates whether the patient has given their consent to access the information. The patient can block the information he/she does not want a different caregiver to see. Over time, NPÖ will also help the patient get more insight into and influence over their own care.

Today, there is no analysis- and decision support in NPÖ, which could be helpful by ensuring that the caregiver is always actively supported in their care processes. IT services created with a focus on business benefits is desirable, that way these solutions would not need to be 'pushed' out to the market, rather health care providers would stand in line to take advantage of them.

5.3 Model of channel strategy formulation and implementation

Distribution channel strategy formulation and implementation of an online portal - if the clinic is to develop in the same direction as banks. Based on theoretical frameworks found in literature, a model for developing and implementing a new channel strategy in healthcare was compiled. The model was compiled in relation to issue areas encountered in the empirical findings, in order to create a model that is suited for the specific context. The logical flow associated with developing the model is described in Figure 5.12.
In Figure 5.12, **Literature** refers to general literature within the area providing contextual understanding and background. **Channels & Services** refer to the objective classification of channels and services at the clinic. **Theoretical frameworks** refers to specific frameworks by Wakefield et al. (2010), Payne and Frow (2004), and Bush et al. (2009) presented in the literature chapter. **Interviews** refers to both interviewees providing contextual understanding on the matter as well as interviewees providing case object-specific information in order to find important issue areas at the clinic. **Implementation** refers to how the previous steps could be used to propose a model for implementation.

The model proposed in Figure 5.13 is portrayed as having a linear flow, but some areas may be considered in parallel as well, if the general order is kept. The model consists of select parts from the previously presented concepts, combined and adopted to be applicable in healthcare in general, and the rheumatology department in particular. For example, this model puts more emphasis on work flow integration and future user involvement than some of the existing models and is compiled with the empirical findings in mind.

5.3.1 **Organisational objectives and strategic fit**

**Broad objectives**

Utilisation of the full skills and resources available is an example of a broad objective (Payne and Frow, 2004) that is important in the rheumatology department. Increasing face-to-face time by decreasing administrative work for nursing staff, enables nursing staff
to focus on healthcare tasks rather than administrative ones. More time with patients was a general wish expressed by the interviewed nurses in particular. Allowing patients to e.g. schedule appointments, request prescription renewals, and request aid certificates in an online portal, frees up time from the medical secretaries and nurses.

**Narrow objectives**

Increase availability, facilitate information exchange, increase patient-involvement in healthcare by encouraging self-monitoring, facilitate patient overview, increase healthcare outcome (more rehabilitated patients) to enhance the overall customer experience are objectives to consider in the studied clinics.

Nurses expressed concerns that they currently have less direct patient contact than before which perhaps is a step in the wrong direction in creating and effective healthcare system. The interviewed nurses report spending a large amount of time on administrative tasks, many of which do not require their nursing competence. Everything that is done at the clinic is required to be recorded, this is often the nurse’s responsibility or the medical secretary’s. Booking patients is partly the nurses’ responsibility, but does often not require nursing competence according to the interviewees. The clinic’s waiting lists make it more complicated with different priorities for patients, different time spans between patient visits, and similar. They do use their nursing skills to some extent when scheduling patients, but one of the interviewees suggested that a lot could be done by a secretary instead (and the secretary instead ask nurses for advice on those occasions that require it). This is probably one of the reasons for the dissatisfaction among patients, unavailability, which means that patients sometimes simply walk straight to the clinic and knocks on the door of the nurses, for example, when they fail to reach the clinic by phone, according to several interviewees.

**Strategic fit**

How would an online portal fit with short-term and long-term strategy at the clinic? In the public sector, long-term fit is important and investments made should result in a solution that lasts several years. There are no signs of IT use declining as of today, people with access to Internet at home has steadily increased in Sweden for the last decades which would suggest an online portal could attract interest from patients. Since IT use in general is already high today, putting efforts in introducing online services would fit short-term as well as long-term strategy, because of online services’ potential to increase health outcome which at the bottom line is the overall goal of the organisation.

Managerial actions that have been found to hinder organisations in choosing new IS to support their objectives and strategies are mainly ineffective communication, too little involvement of stakeholders, and disorganised decision processes while organisational characteristics hindering the decision process have been found to be mainly resistance to change, lack of management support, lack of IT understanding, lack of resources, and organisation complexity. (Bush et al., 2009)

5.3.2 **Involve future users**

**Define implementation teams**

Define key implementation team members early, brief future users of what’s coming. Involving future users may benefit both management as well as the users. Executive owner and key stakeholders must be identified early in the process and they must know how the implementation of a new online portal fits with the organisation’s defined strategy. (Wakefield et al., 2010) In this specific case, make sure representatives of the clinical staff
is included in the implementation process early on.

Failing in selection process and implementation teams may be a reason for the general disinterest among the interviewed clinical staff in *Mina vårdkontakter* experienced in the case study. Wakefield et al. (2010) state that "all involved must have full understanding on how the implementation fits with the strategic objectives as well as patients’ preferences and expectations". Implementing the same system into many different county councils and associated healthcare departments is difficult, and the process need tailoring to each department. Organisations must also be careful when moving through the two last steps of Bush et al.’s (2009) five steps in aligning information systems with organisational objectives; gaining approval, and acquiring & implementing. With the expressed fear from interviewees of not having time to use the new ICT system, it could be argued that approval has not been gained and that it is an issue to consider during the implementation.

**Explain and motivate**

Explaining and motivating to staff why the channels are changing is the first step in gaining approval of them. In order to gain approval from future users, decision-makers must be able to thoroughly explain why the implementation is performed and how it will benefit the clinic as well as staff and patients. Explain that a successful implementation of online services has the potential to decrease administrative tasks for nursing staff, not increase them. Today, some of the interviewees thought of *Mina vårdkontakter* as something that would add to their workload, not facilitate their daily routines. Other interviewees, however, were positive and thought it could be helpful. These mixed views could be caused by a failure to communicate why the new channel is being introduced, potentially leading to it not being used by key individuals which in the long term may cause difficulties for patients trying to get in contact with the clinic.

**Workflow integration**

How should the channels be integrated into the everyday workflow? The clinicians have insight on how daily tasks are performed today, use their knowledge! By using their knowledge and experience, not only does the organisation gain by developing a strategy that is suited at the operational level, but also by involving clinicians in the process possibly enhancing their motivation. Integrating new distribution channels with the clinicians’ workflow is crucial if they are to be used continuously. ICT has to be designed with understanding of the clinicians’ workflows as well as the patients’ workflows in home and in the community, in order to suit both. (Tang et al, 2006)

If an online portal is introduced, and it is designed in a way so it requires attention from nursing staff, the staff needs to have time reserved for dealing with it in the same way they have telephone hours. Forcing staff to deal with the online portal whenever they have time on their hands is likely to diminish motivation and worsen response times for portal communication. This is an issue expressed by some the interviewees who declared that if they do not feel they have the time to use the portal and answer patients in a timely manner, they would chose not to use it at all.

In order for the clinic to meet the patients’ expectations in terms of response time and information sharing; screening and prioritising of electronic communication is needed. Implementation of an online portal potentially changes communication channels and associated work flows, it is therefore necessary to evaluate current communication processes on beforehand. (Wakefield et al., 2010)
In the current situation, it could be argued that communication practice at the clinic is more shaped by what the staff have time for, rather than by what customers/patient may expect and desire. At least, that is the way channels seem to be used today. The interviewees seem genuinely keen to help patients, but time is often lacking for them in order to provide rapid response, which also means that things are forgotten. Forgotten tasks cause dissatisfaction according to some of the interviewees, such as forgetting to provide patients with certificates or prescription renewals. Patients are on occasion not called back by doctors even though they booked telephone time with the doctor. The patient then sits and waits in vain and will ultimately have to book another appointment time. Promised referrals fail, requiring additional contact, etc. Clinical staff express that there are issues with them not being able to keep up with everything expected of them, which leads to duplication of work for patient and clinic when patients are calling back a second time to hear why some things are not done yet. This suggests that perhaps poor support of the systems for reminders regarding these things is an issue. Some of the interviewees stated that there is no clear electronic or easily accessible "To Do" list available at the clinic, rather, they have to make individual lists by hand. Integration of information should lead to such a support in the long run.

Integration work flows associated with how providers and patients communicate need to be considered with implementation of online portals (Wakefield et al., 2010), but the staff today claims to get no, or too little, time to administer this communication according to the interviewees. They need methods to screen and prioritise electronic messages in order to reduce the risk of information/communication overload. To perform this, today’s telephone communication must be thoroughly investigated and mapped out in order to enable design of online portals, for example.

Health information technology embodies great potential, but in order for it to succeed in practice, system design, implementation, and ongoing evaluation must account for professional practices and priorities as defined by nurses and other health professionals. (Sharman, 2007) If IS implementation is seen as a process of organisational development, PCIS implementations can be intended strategically to transform the organisation, and the technology can be allowed to grow along, gradually becoming a part of the basic organisational work routines. It is crucial that the process is properly supported by both central management and future users. The management of IS implementation processes resembles a careful balancing between initiating organizational change, and drawing upon IS as a changing agent, without attempting to pre-specify and control this process. What a successful implementation is can only be discovered in the very process of doing the implementation. (Berg, 2001)

5.3.3 Understand patient-provider interaction

Complexity of sale

Management must understand what channels are useful for what tasks. The complexity of sale is different from task to task, as demonstrated in Figure 5.14. (Payne and Frow, 2004) Sale of generic medical information and administrative is very easy, sale of tailored medical advice is more difficult. Sale of medical treatment and diagnosis is even more difficult. Therefore, management must decide on what channels are appropriate for every type of sale. This should be further researched in future, in order to really understand what tasks require the most attention and ICT support, for example.
While consumers appropriately desire protection of their private health information, aggressive protection measures might hamper e.g. PHR access by patients and clinicians and thereby impeding optimal care (Tang et al., 2006). *Mina vårdkontakter* is a good example of this; electronic identification is needed to perform an array of tasks, but the functionality is not entirely stable and almost all of the questioned nursing staff had experienced login issues which leads to frustration and in the end lower availability - the opposite of what was wished for. Information patients can receive from the clinic by simply calling in during telephone hours and stating their civic registration number require electronic identification in *Mina vårdkontakter*.

Requiring electronic identification to perform tasks that may incur costs for patient or provider, such as scheduling appointments, is likely to be accepted but for simpler tasks, perhaps patients should be able to login using just a PIN. In internet banking, it is often possible to login using a PIN, but the available services are then restricted to e.g. transfer funds between one’s own accounts. Interviewee Pütsep suggested a system where the patient is the owner of the information, making it possible for the patient to decide what grade of security is needed to access certain information. In e-banking, customers are often able to transfer funds between one’s accounts with a lower security level than what is required for making external payments or transfers. This way, information and simpler tasks are easily available for the customer, without the hassle of logging in using high-security credentials. This can be compared to healthcare, where high security is needed for tasks that can incur costs for client or patient, and lower security if only information access is sought and the patient has agreed to make it available in such a way.

It could be argued that e-mail or SMS is not worse secrecy-wise than a regular telephone call or mail, especially since it is difficult for the clinic to accurately determine patient identification over telephone. It is most often enough for a caller to state their civic registration number in order to access information from the medical records for example, but providing information in that way is approved. Further, not all messages from the clinic is sent by registered mail which means there is a possibility that the communication is stolen from the patient’s mailbox. It could be argued that this a a big of threat as limited e-security and that perhaps the patient should be allowed to choose what information (about oneself) could be delivered through less secure channels. Ownership
Economics

What are the cost benefits or detriments associated with certain channels? Automation of tasks, low cost administration, and self-service could potentially decrease operating costs. (Hughes, 2006)

The clinic also has costs to consider that seem very similar to the banking sector’s information and transportation costs described previously by Arbussà and Bernal (2003). Within healthcare, information cost could be seen as new visits, revisits, and other ways information on a patient is collected. Transportation cost could in that case be seen as costs associated with care delivery - provide medication, prescribing medication for the patient to use at home (syringes at home instead of drip at the clinic is a potential change that could provide base for pricing strategy). Providing information, physiotherapy, and examples of exercise to perform at home could also be seen as transportation costs.

Cost and productivity efficiencies achieved with adoption of new distribution channels are, as previously stated, according to Hughes (2006) highly dependent on achieving efficiencies through automation, low cost administration, and self-service. However, this requires customers to want, and be able to, use the channels in a predetermined way according to the supplier’s preferences and needs. (Hughes, 2006) Controlling what channels patients use could be difficult in healthcare, and perhaps not even desirable since the customer base is so wide and diverse, but with lower costs and higher accessibility, patients may be enticed to perform some tasks through other channels than visits to the clinic.

Customers’ communication preferences

It is important to understand how customers/patients want to do business with the organisation. The organisation has to add value for patients in order to be appreciated. Mapping out customer/patient preferences is a vital first step in deciding what distribution channels to use. A customer oriented approach to multi-channel strategy should start from developing an understanding of how different groups of customers want to use different channels depending on task, to create a more relationship-based customer management system rather than transaction-based. (Hughes, 2006) In order to be able to decrease operating costs as above, it requires customers to want, and be able to, use the online services in a predetermined way according to the clinic’s preferences. (Hughes, 2006)

*Mina vårdkontakter* has the possibility for patients to contact all clinics a patient is involved with (or registered at, or has been added to the patient’s list of clinics) regarding e.g. prescription renewal requests, appointment booking (either just request a time for appointment, or actually booking an appointment by browsing through empty slots in the time book), and aid certificate renewals. It is also possible for patients to view who their attending physician is, what the current or previous prescriptions are, and an agenda showing upcoming appointments at clinics connected to the service. The clinic’s decide what services should be available to their patients. A patient can enter cell phone number and e-mail address in *Mina vårdkontakter* to enable notifications from healthcare institutes.

At present, only messaging is enabled in *Mina vårdkontakter* at the rheumatology department according to the interviewees, but appointment booking and prescription renewal services are to be implemented. At least at Huddinge, patients will soon be able to request time for appointments (and select preferred time of day and weekday), send request for
prescription renewal, and reschedule or cancel appointments.

Zickmund et al. (2007) performed a study (qualitative analysis of focus groups) to discern the impact of the provider-patient relationship on interest in using a web-based internet portal in the light of new patient portals being developed, aimed at helping patients living with chronic diseases. Interest in the portal was linked to dissatisfaction with the provider-patient relationship, including communication/responsiveness, inability to obtain medical information, and logistical problems with the office. Disinterest in using the portal was linked to satisfaction with patient-provider relationship, including communication/responsiveness, difficulty in using the portal, and fear of losing relationships and regular e-mail contact with the provider. No patient identified encrypted e-mail communication through the portal as an advantage.

As of today, the clinic has, according to the interviewees, satisfied patients in terms of provider-patient relationships with personalised service and the possibility for patients to switch groups (including doctors and nurses) if they are dissatisfied. However, communication and responsiveness is not excellent since the opening hours for the clinic, the clinic’s voicemail and telephone hours are very limited. This limited accessibility could be seen as logistical problems with the office in accordance to Zickmund et al.’s (2007) study. This suggests that there could be an interest in patient portals at the rheumatology department, but that e-mail communication perhaps isn’t the most sought after feature. Improving patient access to information and adoption of tools to support patient participation in decision-making and updating their health record will inevitably impact care delivery. (Caligtan and Dykes, 2011)

According to the findings by Kreps and Neuhauser (2010), ICT in healthcare must be designed to maximize interactive communication with users to encourage them to be actively involved in healthcare and health promotion, and at the same time be designed to have a broad reach across diverse populations.

**Staff’s communication preferences**

What preferences do staff have? This is tightly connected to workflow integration since the staff will only be comfortable in using channels they have time for and feel are helping them or the patients. The investigation in staff’s communication preferences should be undertaken in parallel with the workflow integration discussion.

There are concerns among some of the interviewees about being too available, some of the clinical staff expressed the wish not to receive mail on evenings/weekends or during research time for example, when not present at the clinic. Patients at times experience low availability and some of the interviewed clinical staff were afraid to have too high availability. One of the problems is that doctors are 'afraid' not to have time to answer patients in an additional communication channel, in the same way as voice mail is only open during daytime. Therefore, the integration of messages via email, *Mina vårdkontakter*, and notes from the nurses so the physician need only log on ONE place to see them is crucial. The clinical staff should not have to login once to see the email, once for messages in the EHR system, once for *Mina vårdkontakter*, while also having a pile of paper communication on the table.

The interviewed staff at the clinics in Solna and Huddinge have very mixed views regarding *Mina vårdkontakter*; some don’t use it at all, most of them consider it time consuming and 'fiddly', they do not even agree on what services/tasks can be performed in the online portal. Further, not all interviewed physicians use this service. The interviews yielded very diverse results on this matter; where some used it to read patients messages and some
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hadn’t even activated their login. The majority of the interviewees identified the ability for patients to book visits online as positive, especially interviewees with administrative tasks assigned.

5.3.4 Develop channel strategy

Important strategic factors in adoption of e-banking have been found to be organisational flexibility, having multiple channels, established brand name, support from top management, systematic change management, mixed strategy selection of vendors, availability of resources, and understanding of customers. Operational factors are fast responsive customer service, rapid delivery of services, 24h availability of services, and e-channel specific marketing. Technical factors were found to be systems and channels integration, and systems security. (Shah and Siddiqui, 2006)

Organisational flexibility in Swedish healthcare is not very high since there are a number of regulations controlling how, and at what price, business is done. One example of organisational inflexibility and excess bureaucracy is an installation at the clinic to deal with the general computer security policy at the hospital regarding computers patients have access to - computers where the patient may enter data into the RA-register. Since the security policy requires computers to be automatically logged off after a predefined number of minutes, the rheumatology department has installed powered tilting boards to ensure the computer mouse is kept moving, disabling the logging off sequence, in order for patients to be able to easily enter their data.

Today, however, the individual departments at hospitals decide on what response times are reasonable for communication via the online portal Mina vårdkontakter, meaning the clinic could potentially offer prompt service through that communication channel. Today, the response time is often slower than other communication channels, it often takes several days to get response on communication through Mina vårdkontakter. Compared to the important strategic and operational factors described by Shah and Siddiqui (2006), the rheumatology department is not at present layed out for success in adoption of e-services with high customer satisfaction levels. If Mina vårdkontakter is to be successful, the clinic needs to make sure that response is rapid and correct to gain acceptance of the patients.

However, choosing a strategy which is combining local branches with the development of e-banking could cause cannibalisation or conflicts between the different departments. This could potentially bring difficulties in motivating personnel in branches to promote Internet banking, since that in the long run would make them surplus to the organisation. (Mols, 1999; Payne and Frow, 2004) In Sweden, the change from branches to Internet banking was not driven by local bank clerks, rather by central management. It was not entirely popular among workers in local branches since many of the job descriptions were changed to back office, telephone service, or system administrators which are services not very similar to what traditional clerks were trained to do. Power was shifted towards central organisations rather than the local branches. (Interviewee, Pütsep) Mols (2001) argues that cannibalisation is important in order for new distribution channels to become successful, management must dare to put effort into the new channels even though it means less focus on existing/old channels. This is a complex issue, though, that is debated in literature.

Decide what channels to use

This section deals with how to formally decide what channels should be available for patient-provider contact.
"A patient may have a few questions for the doctor, but not require a face-to-face visit. A patient may need to be seen in person, but not require the expertise of a doctor. An ill patient may be traveling and unable to go to her personal doctor. A patient with a chronic medical condition may require regular monitoring, but may not be ambulatory. A patient newly diagnosed with a disease may be eager to learn as much as possible about the disease and how best to manage it. A patient may be an active Internet user who would welcome the opportunity to read physician-authored blogs or communicate online with other patients facing similar health problems. Practicing patient-centered healthcare means tailoring service delivery to fit the needs and preferences of individual patients."

(Berry and Mirabito, 2009)

The heterogeneity of patients’ needs and preferences requires a flexible delivery model that offers patients multiple paths to assistance, when and where they need it. An especially undesirable consequence of an inflexible and unavailable healthcare delivery system is the high use of a hospital emergency room as a regular source of primary or non-urgent care. Fragmentation is aggravated by office-based physicians’ slow adoption of technology that would facilitate communication of care information among different medical providers. Berry and Mirabito argue that in the USA, the inflexible office-based practice model with limited opening hours is, in part, responsible for the emergence of retail medical clinics and the overuse of hospital emergency rooms for non-emergencies. (Berry and Mirabito, 2009) Some of these issues were also present at the clinics in Solna and Huddinge, where patients regularly ask nursing-staff medical questions not related to rheumatology, since that is easier than contacting primary care to get answers.

Customers of today require service in a wide variety of channels, e.g. the Internet, face to face, mobile applications, and call centres. Customer contact often occur in several different stages of a sale or transaction (pre sale, sale and post sale) which indicates that it is important to integrate these activities into different channels. (Payne and Frow, 2004) These stages of customer interaction are also present in the rheumatology department; namely appointment scheduling, diagnosing, treatment, and monitoring. However, organisations within healthcare do not have the choice to target a single customer segment, they must have the ability to deal with the full range of customers, or patients. Even though healthcare organisations like the rheumatology department are required to reach all customer segments, they may develop different strategies do reach different customer segments.

As Mols (1999) argues, customers/patients in general nowadays have less time to spend on activities such as visiting a bank and therefore want a higher degree of convenience and accessibility. Thus, Mols (1999) found that compared to non-users, home banking users are more satisfied with their bank, have higher intentions of repurchasing, provide more positive word-of-mouth communication and are less likely to switch to another bank. Today, a variety of channels is offered by the clinic but are they up-to-date? Do they support customer needs? Do they create maximum value for patients? Until there is a well-functioning online portal, the answer is likely to be no. Confidentiality is a big issue in both the banking sector and the healthcare sector when it comes to data sharing and patient/customer access, but the banks managed to resolve many issues associated with it and now the majority (78 % of ages 16-74, according to Statistics Sweden, 2011) of people in Sweden perform banking tasks through the Internet.

When moving from physical to virtual distribution channels, it is important to weigh the cost advantages against the loss of face-to-face interactions. It is crucial that the change is portrayed as something positive towards customers rather than just a way to get them out of the local branches in order for a company to save money. (Peppard, 2000) When
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Providing customers with a variety of distribution channels, it is important that the right message is sent to customers so that the benefits do not seem too one-sided. Some companies have previously emphasised the benefits to themselves of a multichannel approach as opposed to the benefits of their customers. (Payne and Frow, 2004) Further, the strategy must be well-anchored and supported by staff as well as management in order for the customer to get the most out of the strategy in terms of customer experience/service. (Payne and Frow, 2004)

Communicating information without physical visits could potentially improve patient satisfaction since "unnecessary" visits to convey information or appointments even though nothing has changed is not always desirable from a patient perspective, but physical visits instead of telephone conversations provide more compensation to the clinic through the design of current compensation practices.

In Sweden, 91% of the population between the ages of 16 and 74 had access to Internet on a personal computer, PC, at home in 2010 according to Statistics Sweden (2011), meaning the Internet-literate customer segment discussed in the banking sector is potentially huge. Internet access on a PC at home by occupation is presented in Table 5.1. This data shows steady increase in Internet access at home, which is likely to cause more patients to want and accept Internet-based communication in healthcare. However, as discussed earlier, it is important that ICT and process modifications are well-anchored with the intended users to create a unified customer-experience. This is not the case today when some of the clinicians use Mina vårdkontakter, and some don’t. Some use e-mail, some don’t.

<table>
<thead>
<tr>
<th>Group</th>
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</tr>
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<td>55</td>
<td>58</td>
<td>65</td>
<td>67</td>
<td>73</td>
</tr>
<tr>
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<td>72</td>
<td>79</td>
<td>86</td>
<td>88</td>
<td>89</td>
</tr>
</tbody>
</table>

Table 5.1. Access to Internet on PC at home, ages 16-74, in percent (Statistics Sweden, 2011)

Decide on integration level

This section deals with issues to consider when formally deciding on how integrated the communication channels should be. The more integrated the channels are, the more difficult to change channels depending on patient evolvement. Minimum requirement of integration should be to allow clinical staff to access communication and information associated with a specific patient without having to login into different systems. This is today a real concern; some of the interviewees do not want to use more computerised communication channels since they all require different logins, causing staff to be concerned about not having time to interact with patients in those channels.

The base, or hub, for patient information is today the medical record. However, there is very little 'automatic' integration of distribution and communication channels. For every separate mean of communication, the nurses or doctors (or secretaries) have to manually enter information into the system. Input into the medical record is performed after an encounter or communication with a patient if it is not enough time to do it during. Letters from patients can be scanned and included in full in the medical record, short notes from doctors can be directly entered into the medical records, but almost everything else is
dictated by the doctor and then entered into the medical record by a medical secretary. The medical record is also solely focused on the clinic’s information needs rather than the patient’s, which does not aid patients in self-promotion of health (Kreps and Neuhauser, 2010).

There is also an "offline" version of a communication hub at the clinic for internal communication, consisting of (post)boxes where a range of papers are put if doctors are not online in the messaging system connected to TakeCare (system for EHR). It can be argued that this is a kind of channel integration since messages from various sources are printed and put into these postboxes.

A hypothetical online portal could be the next base, or hub, of communication and patient information where the medical records is only one of several inputs. A portal where the patient owns the information and decides who are allowed to access it. Information could be entered from both patient as well as provider, perhaps through mobile applications for patient self-monitoring purposes. An objective medical record is only part of what information is needed in order to provide the best possible care and promote patient involvement in the healing/treatment process. However, it must be strictly controlled what is entered into the medical records in terms of medical information to ensure there is one part of the online portal where only objective information from physicians is entered. This is needed to e.g. reduce the risk of ‘cheating’ with sick-leave/sick-listings.

There are some efforts to channel integration and introducing new channels in healthcare, e.g. Mina vårdkontakter and NPÖ, but no consolidated strategy and use. In many ways, Mina vårdkontakter has the functions needed for patients to manage their healthcare, but if it is not used by the clinics, it is not useful for patients either. At Solna, some of the interviewed staff have not received any official training or instructions in using Mina vårdkontakter. Further, Mina vårdkontakter is not fully integrated with today’s EHR system. It still requires manual entry into medical records, requiring nursing staff to login to yet another system. Partly due to this, the staff expressed fear of not having time to respond to patients in more communication channels. Among the different county councils in Sweden, there are different standards for EHRs and what features are available in e.g. Mina vårdkontakter. Features available in Mina vårdkontakter also differ from site to site even within a county council. Some have implemented many functions such as appointment scheduling for patients (where the patient can see available times and can book), electronic messages to healthcare providers. Others have only implemented the messaging function and ‘passive’/general information. (Interviewee, Pütsep)

It may be desirable for patients (and providers) to be able to acquire an instant overview of one’s health, in the same way e-banking usually allows customers to overview economy. Instead of viewing account balances, stocks or equity funds, patients may view e.g. current diagnoses, medication, information on treatment plans. Mina vårdkontakter is on the way of getting there, but is missing some features and is not considered easy-to-use. (Interviewee, Pütsep)

As with medicine, management is and will likely always be a craft that can be learned only through practice and experience. Yet we believe that managers (like doctors) can practice their craft more effectively if they are routinely guided by the best logic and evidence - and if they relentlessly seek new knowledge and insight, from both inside and outside their companies, to keep updating their assumptions, knowledge, and skills (Pfeffer and Sutton, 2006).

Most doctors or managers would admit problems with the small sample size that characterises personal observation, but nonetheless, information acquired firsthand often feels
Today, there is sometimes too little information in the systems (for example, clinicians are unable to access all medical records from other hospitals / clinics because the different counties have different systems, some places are privatised, etc.). At these times, a hard copy of a journal is obtained which is then scanned as an image and added to the current medical record. NPÖ is an effort trying to resolve this issue, but only a few county councils are connected to the service, resulting in sharing of medical records across departments is still difficult and time consuming. Sometimes there is too much information in the systems instead, for example, all the patient’s previous prescriptions are often visible which makes it difficult for the provider to quickly spot the latest/current medication for a specific patient.

At present, there is no system to handle callback requests which leads to the use of post-it notes instead. For instance, if a patient calls a nurse and requests that a doctor calls the patient back later, there is no place in the system for this type of information.

While IT is an important enabler of CRM systems, it is important that the CRM system is designed from a strategic management perspective rather than an information technology development perspective. (Peppard, 2000) Don’t push to implement CRM systems or other ICT systems because you have powerful IT solutions available, it is important to first anchor them in the organisation and to gain approval from the future users. Wakefield et al. (2010) argue that even though there are many potential benefits for healthcare organisations to implement patient portals, it is critical that the implementation is performed thoughtfully and in an organised manner to ensure economic costs, threats to patient safety, provider productivity, and user satisfaction levels are kept under control.

Keeton (2001) notes that in the case of banking, some advocates of Internet banking argue that banks will use the information they acquire about their online customers’ overall financial condition to provide higher quality service. This could also be true in healthcare, where compiled information from different healthcare facilities could result in providers offering patients a better overall picture and through that provide better care, faster. There are likely less negative issues with this information acquirement in healthcare since healthcare organisations in Sweden are not privately funded and don’t need information for advertisements.

One of the issues with ICT in healthcare is that the systems must be designed to work in many settings with a broad range of different consumers and providers, with a wide range of complexity. More complex health issues often involve collaborative efforts between a number of health care experts, including primary care physicians, medical specialists (such as surgeons, anesthesiologists, oncologists, cardiologists, and dermatologists), therapists, nutritionists, pharmacists, and many others. Even though these experts work in different offices, they need timely access to accurate health records information to effectively coordinate care. Successful ICT applications in healthcare should preferrably be designed to work across technical infrastructures used by interdependent patients and providers. (Kreps and Neuhauser, 2010)

Distribution channel integration affects channel flexibility in the sense that a fully integrated structure could be less flexible in responding to environmental changes than a less integrated structure. This could be due to the fact that managers often find it difficult to change internal practices and redeploy resources whenever there is an environmental
change. In turbulent environments, it is more important to be flexible than otherwise. (Coelho and Easingwood, 2003) Rheumatology could be argued to be a stable business area, since diseases and treatment change slowly and the number of patients is quite stable. This means that maximum flexibility is not likely to be sought after in healthcare, rather, high integration for efficient everyday workflow is desirable. However, since the county councils in Sweden are managed independently, they do not have the same EHR systems, and it is not likely to be uneconomical to implement strategies for channel integration in isolated departments/hospitals.

Staroselsky et al. (2008) studied patient access to secure online portal (to view the patient’s EHR medication list) vs. medication record accuracy and did not find association between online portal access and more accurate medication record in a patient’s electronic health record. Instead, they noted that asking patients to annotate their medication list results in more accurate capture of current medication and non-prescription drugs information than what is recorded in the EHR.

It has further been found (Sharman, 2007) that nurses do not see data sharing as patient care, rather as administrative work that detracts from their nursing time and skills. This means additional data sharing does not lead to better patient care, since the workers in healthcare in many cases define their practice in a different way from those responsible for designing and implementing ICT solutions in healthcare. (Sharman, 2007) However, ICT is a common theme nowadays and healthcare workers need to align themselves with the widespread vision of ICT in terms of e.g. PHRs and EHRs. Simultaneously, their practice and workflow processes need rearranging as ICT evolves in a type of mutual transformation. (Caligtan and Dykes, 2011; Berry and Mirabito, 2009; Berg, 2001) Or, as Sharman (2007) puts it:

"Data sharing does not lead to patient care, rather, patient care is rooted in the skilled practice of individual caregivers. Technology must support and enhance this practice, not diminish it."

EHRs in Sweden are in general not written for the patient to read. Vocabulary unfamiliar to the layman, abbreviations and jargon is frequent. In some cases anecdotes or informal language may be used as a means for future recollection. Therefore, medical records can’t be made available to patients in full, a type of translation and selection is needed.

**Pricing strategy for channels**

Should there be price differentiation for different channels? Should there be financial benefits for the patient to receive information online instead of visiting/calling the clinic? How can the current reimbursement scheme be adopted to suit distribution through online portals? The reimbursement scheme is a political issue that is not discussed further in this report. However, it could be argued that the current reimbursement scheme is outdated and not aligned with today’s communication channels and customer preferences.

In the banking sector, hesitation in switching of banks from traditional local branches to Internet banking by customers may depend on switching costs but also on consumer apathy or ‘lock-in’ (Arbussà and Bernal, 2003) as well as security issues associated with Internet banking and computer-illiteracy among customers, while lower costs and more benefits for the Internet banking customers had the potential to speed up the process (Mols, 1999). The spread of Internet banking benefited consumers by reducing the time and inconvenience of banking transactions and, in very small communities, by providing access to banking services that might otherwise be unavailable if they are too small to support a brick- and mortar branch. (Keeton, 2001) The ‘lock-in’ effect could in healthcare
be compared to patients being used to ‘go to the doctor’ when they are ill, which most patients are accustomed with. In healthcare as well as in banking, pricing strategies could be used to entice utilization of online portals for some of the information exchange since doctor’s visits cost patients 350 SEK every time. With online portals, perhaps another pricing scheme could be used?

**Decide on target group**

When implementing new channels, the organisation must decide whether all patients should be targeted with all channels or e.g. only younger patients with interest in technology should be targeted for smart phone applications. Should the system be aimed at all types of rheumatological diseases or just patients of one or two of the three flows? The organisation could choose to make the online portal available for all patients but differentiate marketing to focus on groups more likely to gain from the new channels. This way, the organisation could have their most ‘aggressive’ marketing efforts directed towards young to middle-aged patients in the computer-literate customer segment in order to prepare for the future clientele.

**5.3.5 Implement and market**

**Gain approval from staff**

Gaining approval from staff is crucial if they are to be motivated in marketing a proposed online portal to patients. This should be a follow-up of the previous section 'Explain and motivate' to remind staff on why the new channel is being introduced and how it fits with their everyday workflow. To accomplish this, management must further explain that the introduction of online services is made to utilise the clinical staff’s competences better, not to try to automate their profession or diminish their importance.

The clinical staff should also have the possibility to see and experience the advantages of the new distribution channel first-hand in order to embrace it.

**Educate staff on regular use and enrollment**

It is equally important to educate staff on regular use and enrollment to ensure patients are able to enroll and use the portal effortlessly. It is important that the enrollment process is user-friendly and efficient, and that it can be performed in a way that suits the whole range of customers targeted (Wakefield et al., 2010). This requires well-educated staff. The staff must be familiar with the system in order to help patients perform simpler tasks, and a more technical support team must be available by telephone, for example.

System implementation and training are further vital issues when introducing new ICT in order for customers/patient to gain the benefits associated with it. The portals should be marketed towards recurring patients, i.e. with chronic conditions. The portals have to be user-friendly, efficient and easy to get started with. To help with this step, clinical staff need to be educated on how to enroll patients efficiently and effectively. Today, patients experience issues not caused by the rheumatology department, rather there are technical issues in the system hindering easy login using electronic identification. On-going system use and performance monitoring are important areas for management to consider and devote resources to. If the system is not in good condition and up-to-date with current market conditions, it may well lose users.
Implement and release the system

Project managers, along with end-user department and information systems staff involvement, acquire and implement proposed information systems to support the strategy and objectives previously formulated. They may need to lobby for resources and gain approval in multiple organisation levels. (Bush et al., 2009) In order to succeed in the implementation process, it is vital that careful planning and execution is undertaken of both the technical aspects as well as staff training. Patients will expect a fully functional system when it is implemented, as well as well-educated staff able to assist them. It is therefore essential to test all aspects of the system before enrolling patients to ensure a smooth introduction to patients. (Wakefield et al., 2010)

As Hughes (2006) argue, when new channels are introduced, existing organisational structures and processes may not be designed appropriately to take full advantage of the possibilities associated with integrated customer management. This means managers need to think twice before adding new channels such as call centres and internet access to the channel strategy and consider its impact on organisational structure and processes, as well as customer relationships. (Hughes, 2006) Adoption of ICT systems aimed at patient care involves transformation of medical practice in several ways, e.g. changing physicians’ relationships with colleagues and patients while also changing patient’s involvement with their own healthcare by facilitating management of chronic diseases. (Berry and Mirabito, 2009)

The implementation process can further be seen as a process of organisational development, intended to strategically transform the organisation, allowing technology to grow along and gradually becoming a part of the basic work routines. It is vital that there is a balance between initiating organisational change with ICT as a changing agent, without attempting to pre-specify and control the process with ICT system development as basis. (Berg, 2001)

Market to patients

When introducing new channels, it is important to market them to patients in order to gain approval and entice utilisation. However, it must be remembered that staff should be educated before it is marketed to patients, in order to ensure patients get a positive experience on first contact.

Potential patient portal users are obviously most likely in the Internet-literate segment of customers, who are already familiar with e-mail, online purchasing and Internet banking so they will expect healthcare organisations to have similarly, user-friendly, and secure systems to manage provider-patient interaction in a patient-centered way. (Wakefield et al., 2010) Focusing on this customer segment in healthcare as well is perhaps a wise choice for the future since utilisation levels of IT in society show no signs of diminishing at in the near (or far?) future. However, computer-illiterates are not to be forgotten or unprioritised.

Make sure patients don’t see it as they are no longer wanted at the clinic, just being pushed away to impersonal online services. Motivate how they will benefit from it, rather than how the clinic will. This was seen as important when banks adopted e-banking (Peppard, 2000; Payne and Frow, 2004), and should be at least equally important in healthcare, since it may be considered a more personal and intimate service than banking.

What drove customers to the online banking in Sweden was accessibility and the opportunity to get a holistic view of the economy rather than price competition. There was
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no big price difference, instead the majority of banks charged customers for using online services. In banking, the banking adviser has access to all information about each customer, in health care, the patient must give permission for the caregiver to access medical records. Even though the records are technically available to many physicians without consent, opening of records are logged to ensure that no "unauthorized" persons open the record when it is not relevant from health care purposes. (Interviewee, Pütsep)

The whole transition from traditional banking to online banking can be seen as a way to smooth out the information and power gaps between customer and banking institution. At present, clinical staff in principle have the power at the clinic - they own the information and knowledge to interpret the information. This is a way of protecting their profession through barriers to excel. If responsibility for the information collection is to some extent switched over to the patient, does it cause clinical staff not feel as important/needed? The patient may, for example via a mobile application or a standardised form enter a few key values, e.g. pain level, medication intake, blood pressure, and blood sugar, to keep a continuous log of symptoms and disease progression. (Interviewee, Pütsep)

This information is currently collected during a five minute conversation at the start of a doctor’s appointment (revisits are often 6-12 months apart, resulting in a lot of medical history to be told/remembered by the patient). A potential smartphone app that collects this information and also making it available to the caregiver, allows continuous monitoring of patient health by monitoring certain key values, which are good indicators of how a patient’s disease progresses. (Interviewee, Pütsep)

In the banking sector, there were concerns that introducing e-banking would communicate to customers that they were no longer welcome at the branches, but the goal here is instead to increase valuable face-to-face time at the doctor’s or nurse’s office by redirecting some of the information exchange associated with the clinic and its patients. Today, administrative tasks and repetitive information provision is taking up precious time in the clinicians everyday workflow.

5.3.6 Follow-up and monitoring

Utilisation

Is the targeted group using the channels as expected? Have previously set goals on utilisation levels been reached? Why not? Investing in e-services won’t be profitably if too few use the services. Regular monitoring enables the organisation to take action if utilisation levels are too low. Actions could be to market the online portal more aggressively, reconsider pricing schemes, or reconsider functionality.

Regularly collect feedback from users, both patients and clinicians, positive and negative. Gather information on experience with the channels in order to keep customer experience high. Feedback could be collected briefly during patient visits to the clinic, concise questionnaires could be sent out to patients, and clinicians can perhaps discuss their experiences during lunch meetings or similar.

Regular education

Regular education for staff to keep utilisation and service levels high, don’t let the e-services be forgotten and unused. However, since clinicians in general don’t have much time to spare during their workdays, make sure the education is concise applicable in their exact environment.

Regular education for patients in order to encourage them to use the services, which is needed in order for the clinic to reach efficiencies through automation. Tutorials can be
published in the online portal, for example.

**Review shifts in communication preferences**

In order to keep up with patient preferences and communication needs, the distribution channel strategy needs rethinking and re-evaluating on a regular basis. Since public sector organisations usually move slowly in strategy changes, they should be looking far ahead when designing new distribution channel strategies, i.e. not only evaluate what patients prefer today, but try to imagine what will be preferred tomorrow.

**Performance and stability monitoring**

E-services in banking are highly dependent on offering customers fast responsive customer service, 24h availability of services, systems and channels integration, and high security. (Shah and Siddiqui, 2006) These factors are likely present in healthcare as well, since they appear general and in sync with today’s expectations on ICT. Regular monitoring of service performance is therefore vital in order to offer fast responses systematically, enticing patients to use the service. If patients do not use the service continuously, the implementation was in vain and the clinic will not experience the potential efficiency gains.

In the same way the introduction of Internet banking was seen as a way of offering customers higher convenience (Mols, 1999; Vessala, 2000; Keeton, 2001), the introduction of online patient portals have the possibility to offer patients the same convenience advantages but in healthcare. However, it requires that management really increase communication responsiveness with the system, patients are likely to expect prompt answers as described by Shah and Siddiqui’s (2006) operational factors. As Keeton (2001) notes, though, keeping responsiveness high and having well-educated staff on the system is likely to increase costs for the clinic, even though there may be efficiency benefits to gain in facilitating communication with patients.
Chapter 6

Conclusion

The aim of the discussion has not been to remove existing distribution channels and convert the department to an organisation similar to an Internet-focused bank. Rather, the implementation of new distribution channels is aimed at increasing accessibility and facilitating information exchange by utilising ideas from the adoption of e-banking services.

As Willcocks et al. (1997) argue, senior managers can most often not simply begin process innovation anew starting from a blank sheet of paper, especially in public sector settings as traditional practices and procedures both influence and inhibit the re-engineering activity.

6.1 Empirical contributions

RQ1: How can the different means of communications be successfully integrated in a way that facilitates overview of patient information?

Channel integration could consist of one unified customer management system where input from EHRs can be paired with PHRs to enable a better overview over patient health. Perhaps change ownership of information by shifting the power somewhat towards patients? Objective data from medical records, together with clinicians’ professional opinions and conclusions should be paired with patient-entered data through e.g. an online portal available on both personal computers as well as on mobile phones (smart phones). Regardless of how the patient-provider communication was carried out, relevant data should be available for both patient and provider.

The unified customer management system should provide stakeholders with a complete overview over patient information, regardless of what distribution channel was used in previous patient contact. All electronic sources should be integrated into the customer management system in real-time, and information gathered through other sources should be entered in a timely and effective manner. Integrating different electronic sources is made more difficult by strict secrecy and security policies which are required in healthcare, a discussion must therefore undertaken to balance these policies with patient and provider accessibility.

In order to create a unified customer management system, understanding of clinicians’ and patients’ workflows associated with healthcare is integral. The customer management system should then be developed in parallel with rearranging of workflows in order to create mutually supportive systems. This, since the strongest finding in the empirical study was that clinical staff were strongly reluctant to use distribution channels not suited for, or aligned with, their everyday work processes.

RQ2: How applicable is the banking sector’s channel strategy implementation? What
Especially one strategic choice made by some banks in association with the adoption of e-banking, the decision to use a hedge or multi-channel strategy, is suited for the rheumatology department. This way, the local branches - or clinics - are kept almost the same, but patients are able to conduct business with the department online, similar to e-banking. Since healthcare is a complex area and must be available to all customer segments, the rheumatology department can not specialise in one specific distribution channel. Rather, it is to offer a variety of channels at the customer’s/patient’s discretion and convenience, and integrate information acquired from the various channels into one, unified view over each individual.

The customer management systems developed for banks offer extensive integration of customer information, providing both bank clerks as well as customers with a unified view of the customer - presented in different ways depending on who’s accessing the information. In rheumatology (and healthcare in general) today, the main efforts of channel integration are put into the the EHR system, which is owned by the clinic and unaccessible, as well as difficult to interpret, for patients. A more customer-friendly system, enabling patients to view information about one’s diagnosis and similar, seemed desirable in the current setting at the department.

Bank-ID is a commonly used electronic identification in Sweden, and it would be recommended to keep the same electronic identification for banking services as well as healthcare services to ensure there are as few barriers as possible for patients to adopt e.g. an online portal while still maintaining a high IT security.

**RQ3: How can an online portal, similar to e-banking services, increase health outcome for patients?**

An online portal could facilitate care efforts by individualising information while also making it easily accessible to patients, reducing time spent on administrative tasks with the aim of increasing valuable face-to-face time at the clinic. If the portal is integrated in such a way that both carers and patient are able to access correct information in a timely manner, patients have the potential to perform self-monitoring of health status and some key figures to keep track of the disease and symptoms. It is integral that patients are able to easily enter data into the systems in order to entice utilisation of the systems. With this self-monitoring functionality integrated with EHR, clinicians are provided with objective data to facilitate assessments during revisits by having access to a ‘true’ overview of progression.

As with the customer management system, the online portal requires integration with the workflows of both clinicians and patients in order to be effective. Otherwise, it risks failing to attract users in the long run since it does not fit with day-to-day tasks.

### 6.2 Conceptual contributions

Healthcare is a complex area with a number of unique features and a wide variety of needs depending on specialty and patient groups. In the literature, there are several separate studies investigating the benefits of online portals, how to align information systems with workflow in healthcare, and discussions on what communication channels are expected and sought after by patients. However, there have not been a lot of focus on distribution channel integration and comprehensive customer management systems, or a model depicting the flow from formulating distribution channel strategy to implementing new channels.
6.2. CONCEPTUAL CONTRIBUTIONS

Further, there have previously been few studies on how e-services and strategic choices associated with distribution channels in other areas, like financing, can be applied in healthcare. This report aims to begin filling these voids, and proposes several future work areas in need of investigation.

In order to create a more comprehensive understanding on how distribution channel strategy decisions could be made, and new channels implemented, in healthcare, a model was compiled including several already established conceptual models. With knowledge from earlier models and the empirical study, the model was then adapted for healthcare in general and the rheumatology department in particular. The model is depicted in Figure 6.1 and is thoroughly explained in Section 5.3.

In Figure 6.1, Organisation objectives and strategic fit refers to the activities associated with defining broad and narrow objectives, and how to achieve strategic fit.

Involve future users includes the definition of implementation teams, explaining and motivating to staff on why new channels are introduced, and most importantly how to integrate the new channels with the staff’s workflow. Following the involvement of future users, Understand patient-provider interaction deals with determining complexity of sale for the different services offered, channel economics, understanding customers’ and staff’s communication preferences. With knowledge of communication preferences and current workflow, the next step in the model can be approached. Within Develop channel strategy, the process of deciding what channels to use, to what extent they should be integrated, what pricing strategy for channels should be used, and what patient groups should be targeted is discussed.

When the channel strategy is defined, Implement and market deals with gaining approval from staff, educating staff on regular use and patient enrollment, implementing and releasing the system, and finally to market the new channel(s) to patients. When implemented, Follow-up and monitoring is important to keep utilisation and satisfaction levels high. In this part, utilisation measurements should be taken, regular education for patients and staff should be exercised, shifts in communication preferences should be reviewed, and performance and stability monitoring should be undertaken.
6.3 Managerial implications

One way to increase face-to-face time, at least when it comes to the nurses’ time, is to shift some responsibility of the administrative tasks towards either a secretary or an assistant, in order to better utilise the nurses’ competence. The nurses reported that only a small minority of their work with waiting lists and scheduling required their nursing competence. Even if an assistant is hired, either on full-time or part-time, there may be cost benefits for the clinic in the end since the assistant can take care of e.g. waiting lists and scheduling for all groups at the clinic. This would enable nurses to have more appointments per day with patients, increasing the income and reimbursement for the clinic.

An alternative to hiring an additional assistant could be to develop an IT system which continuously monitors patient waiting lists and open slots in doctors’ time books in order to schedule patients according to priority levels, and then presents a nurse or secretary with a proposed schedule for the upcoming weeks that only needs to be signed off by a member of the medical staff.

In order to be successful with implementing a new distribution channel like an online portal, management must take ownership of and run the change process and make sure they are anchored in the reality of the clinic, and not just on paper. Education of staff, repetition of usage, and continuous improvements are important areas to consider in order to keep the online portal desirable to use for patients.

When introducing the new online portal, management must make sure an implementation team has been put together with a few 'super users' who know the system well and are able to support their colleagues during the implementation and introduction process. To facilitate the introduction and thoroughly test the system and processes associated with it, a smaller pilot group of patients can be targeted in the first wave of enrollment. When it is confirmed that the processes are working as they should, the online portal can be marketed to a wider audience.

Shah and Siddiqui (2006) identified organisational flexibility as a strategic success factor in adoption of e-banking, which could mean that in order for the rheumatology department to succeed with implementing an online portal, there needs to be a discussion on how to adapt the hospital’s superordinate. This way, sub-par solutions like having a tilting board for the computer mice could be avoided.

6.4 Limitations and further work

One obvious limitation of the study is that managers responsible for strategy development and formulation did not take part. Therefore, almost all data is from the operative level of the organisation, from the nursing staff.

Patients were not among the respondents in this study, data on experience with e.g. online portals were instead aggregated from previous studies. It would be useful to investigate more closely why Mina vårdkontakter is not used to a larger extent and why, in general, it has a questionable reputation among clinicians even though the features available in the system is often desirable. The design and implementation processes associated with Mina vårdkontakter should be reviewed and, if possible, it could be re-implemented and better aligned with workflow. Patients’ views on Mina vårdkontakter should be examined and their preferences on how to communicate with one’s clinic should be investigated.

Further investigate the potential benefits of self-monitoring of patient health through e.g.
6.4. LIMITATIONS AND FURTHER WORK

A smart phone application if connected to an integrated EHR/PHR or online portal, in terms of care quality and customer/patient satisfaction. Further, the issue of ownership of information should be further discussed and investigated. What information should be owned by the patient and what should be owned by the clinicians?

This study did not investigate the complexity of sale for the different services offered by the clinic, this should be investigated in order to enable accurate design of channel strategy and assignment of channels to specific services.

The study was undertaken in one distinct specialist department, further research into the needs of other specialist departments is required to make the results more generalisable since it is not likely to be economical to develop long-term strategy and ICT systems to use in only a separate clinic. It is not certain that the rheumatology department is representative of other specialist departments’ needs.

Time spent on the clinic was limited and provided a basic understanding on the distribution channels used, but further investigation into how patients and providers experience the channels is needed to get a comprehensive picture of today’s challenges and future possibilities for improvements.
Chapter 7

Literature


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