



Department of Economics and Finance

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Thesis in Entrepreneurship, Innovation and Technology

Innovation in the Healthcare Sector:

***Increasing efficiency and financial sustainability in the delivery of
healthcare services***

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CHAPTER ONE

INTRODUCTION

1.1. Rationale

During academic studies of Entrepreneurship, Innovation and Technology I found myself intrigued by the topics . In particular by the multitude of approaches to innovation. Innovation is employed in a vast number of environments and its nature varies from one framework to another with respect to perspective and scope.

Use of innovation is commonly observed within the ambits of technology, industry, marketing, management and organization. Yet it is difficult, if not impossible, to find a commonly held and generic definition of innovation. A *Google* search on “definition innovation” yields more than 95 million results. Common to many of these definitions (at least the ones I was bothered to read) are words such as *new*, *change* and *create*. Words I deem correct to draw upon when defining innovation. An additional defining word for innovation is growth. More than 60 years ago, the Austrian economist and social scientist Joseph Schumpeter indicated growth as the most essential product of innovation. The European Commission recognizes the importance of innovation as they recently set growth through innovation as the main goal for the decade in their Europe 2020 strategy. Schumpeter defined innovation as the engine of growth and the European Commission through their *Europe 2020* strategy aim to achieve growth by using precisely innovation as their principal tool. In a context of healthcare, growth is attained through an increase in efficiency and a reduction of costs.

Traditionally, the concept of innovation within the health sector has been limited to- and conceived as research and development, more specifically R&D of pharmaceuticals and medical devises used in the treatment of diseases. Nevertheless, as the OECD’s Oslo Manual states, “innovation goes far beyond R&D”. The Oslo Manual accordingly defines innovation through the following four distinctions: process-, product-, marketing- and organizational innovation (OECD 2005). In fact, as the authors of “The Management of Technological Innovation” remark; “R&D is simply an input into the innovation process, and in many industries several departments are responsible for innovation within firms. Indeed firms in a wide range of sectors do little or no formal R&D and yet they are highly innovative” (Dodgson 2008, 79). On the same note, the professors Omachonu and Einspruch of

the paper “Innovation in Healthcare Delivery Systems” emphasize that “innovation in health care are related to product, process, or structure”, where products generally refer to goods and services and the process is essential in the delivery the product or service.

In this paper I will explore a selection of the different types of innovation put forward by OECD’s Oslo Manual within a framework of innovation in the delivery of healthcare services.

1.2. Thesis statement

The healthcare sector represents an important stakeholder in society. The industry comprises both public and private institutions, management and staff and last but not least, patients. Most people during their lifetime will be in need of some sort of healthcare. Generally, most people pass through a healthcare institution as they enter the world as well as when they exit it. Thus, the healthcare sector’s existence in society is vital to human needs. Unfortunately, the healthcare sector is not delivering fully in accordance with its importance to society. A report on healthcare systems made by PricewaterhouseCoopers, summarized the problem as follows; “globally, healthcare is threatened by a confluence of powerful trends – increasing demand, rising costs, uneven quality, misaligned incentives. If ignored, they will overwhelm health systems, creating massive financial burdens for individual countries and devastating health problems for the individuals who live in them” (PwC 2005). The report predicts that if healthcare systems remain at status quo, they will be unsustainable within 15 years.

Medical treatments, invented through R&D, have made astounding advances over the last decade. As mentioned above, healthcare innovation is not just about new drugs and therapies, but it also comprises the delivery of health care services. Notwithstanding the advances of R&D, delivery of health care services is not keeping up the speed and the current state of primary care is deteriorating. The reality is that the framework within which these state-of-the-art treatments are delivered is more often than not inefficient, outdated, ineffective, consumer hostile and extremely costly. As Ridhima Aggarwal highlights in her article “Innovative Approaches to Healthcare Delivery”; “the patient experience is being undermined, with less and less face time with doctors, delayed access due to a shortage of primary care doctors, and long wait times even for patients who do have appointments” (Aggarwal 2014). Healthcare expenses are constantly increasing and gradually eating up national

budget in countries throughout the world. In many countries these expenses grow faster than the actual economy. The challenges and necessities differ from country to country and even more so between developed and undeveloped nations.

Nevertheless, it is possible to identify and define a set of common denominators and universal 'threats', among which we find chronic illnesses, aging population, shortage of skilled professionals and last but not least, resource constraints. The recent financial crisis has exacerbated the problem and currently nations are cutting their healthcare budgets and struggling to pay their debts. All of the above are universal challenges in desperate need to be addressed.

In this thesis I claim that innovation in part can be a solution to the highlighted problems and that innovation does not necessarily entail huge outlays neither in terms of time nor in terms of money. I will demonstrate the thesis through two different cases, concerning two different stakeholders (i.e. public and private healthcare provider), which have employed two distinctive approaches to innovation. Both implementations have produced successful results in increasing efficiency and containing costs. In fact, "the primary care sector represents a tremendous opportunity for innovation, with the development of a spectrum of compelling new delivery models – from retail health to concierge-type practices to telemedicine" (Aggarwal 2014).

The paper will address the challenges within a framework of innovation in delivering healthcare services. More specifically, it will scrutinize methods aimed at increasing efficiency and financial sustainability by means of business model- and organizational innovation. The assessment will encompass to very different healthcare-delivery models and analyze the potential contributions the innovation models may bring to the pressing challenges faced by healthcare systems.

1.3. Method

The work will comprise exhaustive explanations of the theory before embarking on analysis of practical cases borrowed from actual efforts to implement different types of innovation in the health care sector by both private and public health care providers.

1.4. Structure

The paper will be divided in to two main chapters in which I will examine two different approaches to innovation in the healthcare sector. In the first chapter I will study the concept of business model innovation. I will first explain the theory behind

this type of innovation and then go on to a case study on how this innovation has been implemented in the business model “Minute Clinic” in the United States.

The second chapter will look at organizational innovation in the healthcare sector. The chapter will examine the concept of Toyota Production Systems (originally a process innovation), also known as lean production systems, and through a case study of a public hospital located in Norway, there will follow an analysis of the implementation of this organizational tool in the healthcare sector.

The third chapter will entail an antithesis in which I will analyze the different barriers and obstacles that possibly hinder the implementation and success of innovation in the healthcare sector.

Ultimately, I will attempt to reach a conclusion and by that time I hope to have left some food for thought on the topic of innovation in delivering healthcare services.

CHAPTER TWO

Business Model Innovation in Delivering Healthcare Services

2.1 Introduction

In this chapter I will explore the use of business model innovation in delivering healthcare services. Through a case study of MinuteClinic, a private (commercial) provider of primary care, I will analyze the consequences of pursuing such a path of innovation. I expect to find that business model innovation brings substantial advantages to the healthcare system, in terms of increased efficiency- and financial sustainability.

2.1.1 What is a business model?

Before embarking on a detailed discussion on business model innovation, it is essential to have a clear and concise idea of what a business model is. Among the many and elaborate definitions available, one of the more contracted and effective definitions describes a business model as the rationale by which “an organization creates, delivers, and captures value (economic, social, or other forms of value)” (Girotra and Netessine 2013). I find this to be a useful definition for this thesis.

2.1.2 Turning to business model innovation

Business model innovation is focused on *how* to do business, rather than the “what, when or where” that are usually in the center of marketing strategies and business model plans. As Amit and Zott emphasize in their article on “Business Model Innovation: Creating Value in Times of Change”; “business model innovation can allow managers to resolve the apparent trade-off between innovation costs and benefits by addressing *how* they do business” (Amit and Zott 201, 2). In many cases this requires placing the customer’s definition of value, as opposed to the product value, at the center of the business model. Business model innovation has a greater focus on value creation rather than value capturing.

Business model innovation does not necessarily entail the introduction of a new technology neither the creation of new products or new market niches. Instead it identifies new ways/methods of delivering already existing products or services, using existing technologies and introducing it in existing markets (Girotra and Netessine 2013). As Girotra and Netessine emphasize in the research paper “Business Model Innovation for Sustainability”; “a key difference between business model innovation and technological or product innovation is that, unlike the latter that

usually relies on market or technical knowledge specific to the industry, business model innovation is deeply rooted in the laws of economics and operations management that are universally applicable to a wide variety of industries” (Giotra and Netessine 2013, 2). In other words, business model innovation can be used in a wide range of industries, healthcare included. The same authors also explore how business model innovation essentially can be thought of as an optimization problem where reduction of inefficiencies and maximization of utility is the objective of the function.

More can be said about business model innovation, but I believe the factors mentioned are those that characterize the case of MinuteClinic. An in-depth and systematic study will follow, but in synthesis MinuteClinics business model innovation offers a novel service delivery system that enables an increased adoption and better use of existing technologies. The success of retail clinics business model innovation basically takes the form of *service innovation*. The concept entails selling functionality and convenience to the customer rather than a product (e.g. think McDonalds). An absolutely essential enabler to the success of business model innovation has been technological innovation (e.g. internet and broadband). In the next section I will discuss the difference between disruptive and sustaining innovation and successively unveil MinuteClinic’s enabling technology crucial to its success. Moreover, Zott and Amit include the importance of introducing (strategic) partners in the “new value-creating activity system”, a factor that has been crucial to the success-story of MinuteClinic. A discussion on partnerships will follow as well.

2.2 Innovation backdrop

2.2.1 Disruptive versus Sustaining Innovation

A sustaining innovation can be defined as one that meets the demands of existing customers in established markets. Sustaining innovation normally happens through incremental changes/improvements aimed at increasing the performance of already established and accepted products. Disruptive innovation, on the other hand, creates entirely new (niche) markets and new business models. When competing against the incumbent firms in the sector, the disruptor has to compete in a market dominated by industry leaders. The disruptor is usually not an incumbent to the industry, but rather a new entrant that “attack from below”. For several reasons, among them management myopia, fear of risks, and “business as usual”-mindset,

the incumbent firms rarely propose or promote disruptive innovation and technology. The disruptee (established firm) continues doing what has worked in the past, ignores certain segments of technological change and focus' on improving established products for an already existing customer group (Bower and Christensen). It is instead the outsider, who generally has much less to lose, that recognize new opportunities and generate disruptive and radical innovations.

In this specific case study, the disruptor is the retail clinics (i.e. MinuteClinic) and the disruptee (or incumbent) is the traditional doctor's office and hospitals.

Bower and Christensen argue that disruptive technologies "introduce a very different package of attributes from the one mainstream customers historically value" (Bower and Christensen 1995, 45) and Christensen in a separate article notes how disruptive technologies "are typically cheaper, simpler, smaller, and, frequently more convenient to use" than existing established products in the market (Christensen, 2011). Consequently, disruptive innovation often leads to a dramatic performance break with the past. Furthermore, he accentuates the fact that most disruptive innovations have "three enablers: a simplifying technology, a business model innovation, and a disruptive value network" (Christensen 2011). All of these three factors are present in MinuteClinic's business model and will shortly be discussed in greater detail.

2.2.2 Technological enabler

The case of MinuteClinic (and retail clinics in general) presents an odd case, as its product/service is a disruptive innovation at the same time as it is a business model innovation. Business model innovation is usually an enabler for disruptive innovation, but in this case I deem it more appropriate to say that the disruptive business model innovation is enabled by a technological platform (i.e. Christensen's simplifying technology). In the case of MinuteClinic, the technological enabler is a standardized software program that aids the nurse and physician assistant in the diagnosis and treatment of the patient through a care-algorithm that is able to make a simplistic diagnosis based on the information fed by the nurse (MIT 2010). In other words, information technology is the technological platform, which "transforms a technological problem from something that requires deep training, intuition, and iteration to solve, into a problem that can be addressed in a predictable, rule-based way. Diagnostic abilities are the technological enablers of disruption in health care" (Christensen 2011). MinuteClinic's technological enabler permits certain procedures

to be executed outside the traditional framework (i.e. hospital) and without the traditional executer (i.e. doctor). The theoretical and direct consequences of the simplifying technology include increased accessibility, unlimited possibility for diffusion, and reduction of cost. As Christensen concludes in his article on disruptive innovation; “Disruption in health care entails moving the simplest procedures now performed in expensive hospitals to outpatient clinics, retail clinics, and patients’ homes” (Christensen 2011)

In some cases and industries, disruptive innovations will overtake the position of established industry firms by making them obsolete, but this does not necessarily happen. Some disruptive innovations, like retail clinics, may allow for co-existence between the disruptor and the disruptee. Contrary to the traditional industry shakeout, some disruptive innovations might even “enhance the capabilities and resources of incumbents, allowing firms to transfer lessons and experiences from one industry era to the next” (Dodgson 2007, ch. 3). Retail clinics does not (at least for now) constitute a threat in this respect, as it takes pressure of hospitals and should (theoretically) give leeway for “better” treatment in the traditional healthcare systems (e.g. shortening queues, taking away unnecessary/inappropriate visits, etc.).

2.3 Case Study: MinuteClinic

2.3.1 MinuteClinic and retail clinics

MinuteClinic is a commercial healthcare provider offering its healthcare services inside selected CVS pharmacies across the United States of America. MinuteClinic is the biggest provider of what is commonly known as “retail clinics” or “convenient care clinics” (CCC). Other retail clinics include Take Care Health Systems, The Little Clinic, RediClinic, Aurora QuickCare and QuickHealth (Deloitte 2008). Retail clinics are small-scale and easy-access healthcare providers with their business allocated in connection with venues such as malls or grocery shops. They generally offer a limited service, treating common medical conditions such as respiratory illnesses, head-, ear-, eye- and skin conditions, stomach-, digestive- and urinary conditions as well as immunization. Clinics are open seven days a week until late in the evening and treatment and diagnosis are offered by trained practitioners such as nurse practitioners (NP) and physician assistant (PA). Retail clinics operate in a niche market with high potential for economics of scale. The business model is

consumer-driven aiming at low complexity and high convenience for the potential patient. Today, approximately 1,600 retail clinics operate across the United States.

2.3.2 History

Rick Krieger founded QuickMedx (now MinuteClinic) in 2000. Mr. Krieger was in fact an unsatisfied patient-customer frustrated by the long wait time at the local urgent care center. The experience provoked him to consider the possibility of a new approach to healthcare delivery and an alternative to urgent care centers and ERs. With the help of a team of professionals, Krieger created what turned out to be the first commercial retail clinic for healthcare, opening a kiosk-based clinic in a warehouse in 1999. The year after, QuickMedx signed with Cubs Food Stores and opened for the first time in connection with a retail store (Smith and Patterson 2008). The concept experienced a huge demand and rapid growth, and in 2002 QuickMedx became MinuteClinic. The company continued to expand and in 2005 it entered a strategic partnership with the pharmacy giant CVS Corporation (now CVS Caremark Corporation). The partnership enabled the company (MinuteClinic) to open retail clinics within CVS drugstores and consequently allowing for a superior pace of expansion at minimal cost. The partnership was beneficial to the business model as it increased the convenience and appeal of the service offered to the customer. The clinic becomes a one-stop-shop offering diagnosis, prescription and treatment (pharmaceuticals) at the same place. CVS Corporation acquired MinuteClinic shortly after and today the company has 800 MinuteClinic locations inside their CVS/pharmacy stores. The service has expanded further over the years and now includes an even vaster selection of medical treatments.

2.3.3 Concept

MinuteClinic refers to its business model as “McDoc in the box” with fairly obvious connotations to the fast-food restaurant McDonalds, which is based on an easy access, fast service and low cost streamlined business model (MIT 2010). MinuteClinic provides its customers with a “menu” of available services and operates under the slogan “You’re sick. We’re quick”, aiming to treat all patient-customers in no more than 15 minutes (MinuteClinic 2014). In fact, MinuteClinic is a walk-in clinic with no need for appointment, open seven days a week (evening, weekends and holidays included) and located conveniently within reach of the customers local neighborhood. Furthermore, MinuteClinic has transparent pricing, and charges its services significantly below the price level of hospitals and doctor’s office and they

accept all types of payment including healthcare insurance. The clinics are operated by nurse practitioners and physician assistants, which allow for lower costs of services. The NP and PA are aided by information technology (standardized algorithm) in the diagnosis of the patient. Moreover, the nurse and physician assistant are affiliated- and rotate within the community healthcare system in order to prevent MinuteClinic inertia and to allow for a broader professional experience and competency of the staff (MinuteClinic 2014).

2.3.4 Why does it work?

MinuteClinic and retail clinics in general offer a low threshold service as a complement to established healthcare institutions such as emergency rooms and hospitals. It has not replaced existing healthcare providers in the market, but it has rather disrupted and challenged the traditional (dominant) approaches by delivering healthcare services at the customer's premises. It has a consumer-centric business model that offer a convenient, easy-to-use, transparent and affordable service to its customers. MinuteClinic aims at capturing a niche segment within the market represented by low-risk customers (i.e. treating exclusively common medical conditions) with particular demographics such as people in search of minimum complexity/turnkey solution, low-income families and housewives with children.

MinuteClinic is a complement to traditional healthcare institutions as it reduces wait time by clearing these institutions of inappropriate and costly visits. Hospitals no longer "waste" valuable time on patients who are in need of a simple prescription and these patients are no longer obliged to queue for that same simple prescription. Ideally, MinuteClinic saves time and money for all parties involved. Society gains as MinuteClinic also has the potential to increase healthcare usage. Being a low threshold service it potentially appeals to users who formerly did not benefit from the use of primary care, for example patients not covered by insurance. In fact, a research study published by The America Journal of Managed Care found that 20% to 30% of the patients seeking medical services at a retail clinic to be uninsured. Moreover, the same study found that approximately 50% of retail clinic patients did not have a primary care provider at the time of their visit (Sussman et al. 2013) Research made in 2008 by Health Affairs showed average cost at a retail clinic to be approximately half of that charged by the physicians office and one-fifth of the emergency department (Zamosky 2014). Sussman and his colleagues also found that MinuteClinic operates with prices considerably below the average level charged

by established healthcare providers. Their studies have shown that retail clinics cost are 40% to 80% lower than the services provided in the physicians office, urgent care sites, and emergency departments (Sussman et al. 2013). Furthermore, they deduce that there are considerable cost savings associated with usage of retail clinics for the single patient and that ulterior savings are derived from decreased physician office- and hospital visit expenses. Moreover, they found a correlation between use of retail clinics and a reduced number of emergency department visits. Another of MinuteClinic major appeals lies in its accessibility. In fact, the majority of visits at retail clinics are registered during hours when other providers are closed. In a survey conducted for the period 2007 – 2009 by HealthAffairs, 44.4% of all visits to retail clinics occurred on the weekend or weekday hours when doctor's office are typically closed.

Certified research studies have demonstrated the superiority of diagnostic test executed by algorithms as opposed to those made by an average doctor. An algorithm, as opposed to a human being, will never be subject to stress, personal judgment, moral bias, mislead focus and/or reckless behavior. Studies have validated the quality of this algorithm and proved it to be more accurate (lower rate of failed diagnosis/mistreatment), better and cheaper than traditional diagnosis performed by doctors. In pursuit of the lowest, effective level of care principle (known as the principle of LEON in Norway), diagnostic test performed by algorithm (and accordingly by MinuteClinic) are preferred over traditional diagnosis.

2.3.5 Model weaknesses

Unfortunately for MinuteClinic, standardization comes at the expense of flexibility. At least for now, technology can only deliver to a certain level in terms of diagnosis and treatment of patients. Consequently, MinuteClinic, selling convenience to its customer base, risks that services offered and customers' expectations will grow at different rates and eventually diverge. The plug-and-play generation growing up today expects turnkey solutions and one-stop-shopping and consequently the present solution, requiring the customer to travel to a location, may cause for friction and inconvenience. A plausible competitor in this respect is e-health, which is able to offer an ever-increasing array of solutions via information technology (e.g. doctor on demand through applications such as Skype and various mobile applications). The sector is still lagging behind and the technology "lacks the range and robustness of

traditional healthcare” (Terry 2013, 754), but is likely to exhibit paramount potential in the future and eventually disrupt status quo on how to deliver healthcare services.

Opposition from the traditional healthcare system is inevitable. Companies that represent new and estranged business models “face opposition from local hospitals, physicians, and other industry players for who such innovation poses a competitive threat” and accordingly these players will make extensive efforts to obstacle or undermine the new market entrant, i.e. MinuteClinic (Herzinger 2006). In fact, a few years ago, the American Medical Association played the public policy card, claiming that the level of regulation of retail clinics “raises concerns about liability, health risks and potential conflicts of interest between the clinics’ nurse practitioners that order up prescriptions and the pharmacies that fill them” (Nalle and Boston 2011, 1). MinuteClinic has steered clear of most allegations of the kind as it has cleverly entered into a series of affiliations with the local healthcare providers. More on this shortly.

MinuteClinic operates in a market segment with few if any barriers to enter and thus is prone to a lot of competition. Nevertheless, MinuteClinic has, through its partnership with CVS pharmacies as well as affiliation with the local hospital community, been able to protect its position and become a market leader. In order to compete with MinuteClinic new entrants in the markets will be dependent upon a partnership with a pharmacy (or equivalent) to facilitate collaboration, collocation and efficient diffusion (i.e. economies of scale). Another benefit to MinuteClinic’s business model innovation is that competitors might find it difficult to imitate and/or replicate an entire novel activity system, however it is generally easier to copy a single new and innovative product or process (Amid and Zott 2010).

2.3.6 The Road Ahead

MinuteClinic demonstrates high potential for growth. CVS Caremark Corporation is the second largest pharmacy in the US with more than 7,600 pharmacies across 45 states. The company’s aim is to open a total of 1,500 MinuteClinics in 35 states by 2017. The consulting company Accenture predicts a future of increased growth in the retail clinic sector and estimates an annual growth rate of 25 – 30% between 2012 and 2015. The estimate entails a doubling in the number of retail clinics (to a total of 2,800) as well as considerable savings to the public healthcare system, estimated at 800 million dollars per year in the same period. At the end of 2013, retail clinics received approximately 6 million visits on a

yearly basis. It might seem a lot, but in reality it only “accounts for less than 5% the 100 million outpatient visits to physicians’ offices and emergency departments for simple acute conditions” (Hwang and Mehrotra 2013, 1). Furthermore, according to a study made by the Center for Studying Health System Change, only an average of 3% of the American population was seeking primary care in a retail clinic over the period 2007 – 2010 (Zamosky 2014). A plausible reason for this can be lack of trust from the patient-customer and limited scope of services provided. However, remedy may be around the corner as Obama’s Affordable Care Act is likely to put increased pressure on primary care providers and with shortage of medical staff this could possibly give a revitalized boost to demand for retail clinics. As retail clinics cost the insurer 34% less than care at a physician’s office on average, it should constitute an interesting alternative and represent considerable cost savings to society (Parente and Town 2009).

Strategic partnership and collaboration with the local and public healthcare system constitutes considerable advantages to the business model. MinuteClinic does not seem to consider the established healthcare system (incumbents) as competitors. The company’s aim is to incorporate itself in the system representing an extension of services. Over the last couple of years, MinuteClinic has launched a multitude of collaborations with local healthcare communities. Through these affiliations, MinuteClinic collaborates with hospitals, clinics and physicians in an effort to provide its patients/customers with extended access to quality services in their local community. Today it has affiliated branches in 21 different states. The program also function as a bridge builder between the commercial healthcare provider (i.e. MinuteClinic) and the public healthcare systems. By way of this program MinuteClinic also seeks to integrate and streamline their medical records with those of the local system, with the ultimate scope of enhancing patient experience and improve the service they offer. It appears to be an intelligent step in the right direction, as retail clinics are wise to explore the possibilities of employing Electronic Medical Records (EMR). EMR are standardized records that enable the patient-customer to bring these along wherever he/she goes and have their entire medical history always at hand. The convenience to the patient is unquestionable, but MinuteClinic is likely to reap the fruits of the investment as well. One of the major challenges faced by retail clinics today is credibility. Traditionally, it has been a human being executing medical diagnosis and treatment, and changing the norm and habits might take some time.

Increasing convenience and at the same time the reliability (authority) of MinuteClinic's services will contribute to the appeal and diffusion of the business model.

MinuteClinic can benefit from an expansion in the range of services as they meet and satisfy customer demand. With longer lifetime expectancy and increasing number of patient suffering from chronic illnesses, retail clinics should constantly re-innovate the spectrum and the way by which they offer services to their patient-customers. A re-innovation of the business model may possibly be done in light of the previous discussion on e-health. MinuteClinic might have disrupted the current health care system, but nothing stands in the way of MinuteClinic being the disruptee in the future. To stave off such a destiny, MinuteClinic can welcome aboard more information technology and explore the possibilities of extending and complementing e-health to its range of services.

2.4 Chapter Conclusion

The absolute comparative advantages of retail clinics as opposed to traditional, established healthcare providers are the convenience, accessibility and costs factors.

MinuteClinic does not aim to disrupt the traditional (incumbent) healthcare institutions, but rather maximize efficiency and minimize cost in its business model. With the technology available today, MinuteClinic is in line with its vision of affordable and convenient health care services. Potential ambitions of increased competition with hospitals would most probably require large investments and possibly yield only limited economical payoffs. It could also lead to reduced convenience and sacrifice the comparative advantages of the current model. Increasingly advanced services (e.g. MRI, surgical units etc.) require additional practitioners (traditional), substantial investments and considerable expansion of working-space. Technological advance constitute a ceiling for MinuteClinic's expansion and growth possibilities. Changes and expansion in excess of what has been mentioned hitherto will depend on future technological advances.

Despite of immense growth potential, the current business model represented by retail clinics can only reach out to a certain percentage of the population and does (for now) neither aim nor is it able to treat the entire spectrum of conditions treated by the established traditional healthcare system. Retail clinics have not been able to

disrupt the incumbents of the healthcare system. The future brings specific challenges in the form of rising consumer expectations and demographic shift towards elderly. It is therefore necessary to proceed with an analysis of what innovative measures are within reach of the public healthcare sector (i.e. hospitals) to curb the trend of increasing costs and decreasing efficiency. The following chapter will tackle this question.

CHAPTER THREE

Organizational Innovation in Delivering Health Care Services

3.1 Introduction

Public healthcare is a complex system that comprises a tremendous amount of input factors and stakeholders. Loss of efficiency and financial instability are immediate symptoms of malfunctioning if the system is not treated with care. The long-run effects of running sub-optimal health care systems are dangerous for the hospital as well as for the patient and society.

Traditionally, cost control in hospitals and healthcare institutions have been based on input/output evaluations (Lega et al. 2013), and little attention has been given to the actual and effective management and organization of the processes that utilize the inputs and generate the outputs. The recent financial crisis has given new ground for cost controls as public authorities are imposing restrictions on public hospital's budgets and flexibility, e.g. through limits on personnel, purchasing, implementation of new technology and so forth. The authors of the article "Is Management Essential to Improving the Performance and Sustainability of Health Care Systems and Organizations?" argue that this type of cost control is equivalent to input control (rationing) and may have critical consequences in terms of "access, equity of treatment, and quality" (Lega et al. 2013, S47) In this chapter I argue that organizational innovation in the healthcare sector can bring substantial advantages in terms of increased efficiency and financial sustainability. I will explore how process innovation can be used as an organizational innovation tool and the consequences of implementing this type of innovation in a context of healthcare delivery in the public sector. The case study will examine the introduction of lean production system at Lillehammer public hospital in Norway. A theoretical framework explaining the different types of innovations applicable to the case precedes the actual analysis.

3.1.2 Process Innovation

Process innovation involves a change in how a product or service is produced and/or delivered. The OECD's Oslo Manual defines process innovation as "a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and software". Process innovation can bring substantial advantages/benefits to a company by for example reducing and/or enhancing the production system.

3.1.3 Toyota Production System

Toyota Production System (TPS) is a world-renowned and widely implemented process innovation created by the Japanese automobile company Toyota. The production system saw daylight towards the end of the 1800's and continued its development in the 1900's, more specifically with the implementation of the two methodologies "Jidoka" and "Just-in-Time". Toyota has practiced continued improvement of its production systems and today the Toyota Production System has evolved into a "product". TPS has been paramount to Toyota's success and, not only other car manufacturing companies, but organizations operating in all kinds of industries attempt to replicate the 'Toyota way' within their respective business environment. According to Chalice, the author of "Improving Healthcare Using Toyota Lean Production Methods"; "Toyota has become the benchmark by which American automobile executives judge their own companies. Compared to traditional mass production techniques, Toyota manufactures with half the human effort, half the manufacturing space, half the investment tools, half the engineering hours, and half the time to develop new products. Despite being the most efficient carmaker in the world, Toyota produces world-class-quality automobiles" (Chalice 2007, 19). The Toyota Production System, which in later times also is referred to as Lean Manufacturing System, was originally developed as a method to enhance Toyota's vehicle production. The system aims to augment the quality of production and at the same time (or as a consequence) reduce cost. The system is highly people and customer oriented. It is based on a concept of complete elimination of waste as well as overlapping processes. Different teams work together and communicate intensely during the production process. The aim is to detect potential flaws in the product as early as possible and increase the efficiency of the production phase. A final and important objective is to control cost and consequently improve the financial sustainability of the company.

Toyota Production System is essentially built on two pillars: Just-in-time (JIT) and Jidoka. These are tied together by a central guideline called Kaizen.

3.1.4 Jidoka

According to Toyota, Jidoka means "automation with a human touch". The term was coined by Sakichi Toyoda in 1902. Toyoda, the founder of the Toyota Group, invented a machine to detect errors in the production processes, which would accordingly interrupt the course of automated action. The system allowed for a

production process consisting of dozens of automated machines (i.e. mass production) overseen by few operators, without compromising the quality of the products. According to Toyota, it is a technique designed to highlight problems (Toyota 2014). Applied to a more general setting, Jidoka becomes a process of detection and correction of abnormalities within a given system (Rosenthal 2002). Errors and problems are solved directly and immediately, thus saving time and allowing for activities linked to improvement of quality within processes and products. It is essential that the employee has visual control of all the involved processes thus allowing for instant recognition of problems.

3.1.5 Just-in-time

The philosophy of Just-in-Time (JIT) is built on a concept of waste reduction and productivity enhancement. According to Toyota, “only what is needed, when it is needed, and in the amount needed” will be produced with the final scope to satisfy customer requirements. Adhering the JIT-principle should result in elimination of waste, inconsistencies and unreasonable requirements, with the final result being improved productivity (Toyota 2014). Elements that are not value-creating are considered waste. Central to the JIT- concept is a production control method called “Kanban system”. The system, which is also referred to as the supermarket method, is built on the control cards used in inventory system in supermarkets. It customizes the restocking of goods based on an exact track of demand. In other words, only a minimal stock of components is held in the manufacturing area. The system offers flexibility and provides complete control on the logistical chain within the production process.

3.1.6 Kaizen and the five S

Kaizen lies at the core of Toyota’s values as it strives for continuous improvement. In practice, Kaizen means that all involved parties should always contribute and look for ways to improve the production systems. According to Toyota, a clear mind should operate in a clear and clean workplace.

- **Sort.** Remove unnecessary items, and preferably throw them away in order to eliminate obstacles and prevents employees from being disturbed.
- **Systemize.** Prevent loss of time by giving easy and fast access to the necessary items and allowing for a natural and smooth workflow.
- **Shine.** A clean workplace is safer and provides increased wellbeing to the employees. It also keeps equipment in good shape.

- **Standardize.** Maintains order and an elevated standard of production.
- **Sustain.** Keep everything in line with the new and improved order.

All elements are intended to organize the workspace in the most effective way by taking away distractions and time-thieves, consequently allowing for more efficient operations and production.

3.1.7 Organizational innovation

According to the Oslo Manual, organizational innovation is the “implementation of a new organizational method in the firm’s business practices, workplace organization or external relations” (OECD 2005, 55). There is a main difference between organizational changes and organizational innovation. The latter entails methods previously unused by the organization and is a product of strategic decisions taken by the management of the organization.

3.2 Case Study: Lillehammer Public Hospital

3.2.1 Lean production

TPS was originally created as a process innovation, but has later been developed into an organizational tool, which is world-renowned for “cleaning up” firms. Companies in a multitude of sectors aim to achieve the same strategic and competitive advantage that has enabled Toyota to stay at the forefront of the automobile sector for five decades. In fact, lessons from Toyota’s production system have proved transferable (and applicable) to numerous business settings and sectors. Today, these valuable takeaways have become generic and standardized principles within a framework of organizational innovation known as lean production/manufacturing. In 1990, the authors Womack, Jones and Roos wrote the book “The Machine That Changed The World”, in which they analyzed the Toyota production systems and introduced the term *lean manufacturing*. “The Lean Enterprise Institute” defines lean production as: “A business system for organizing and managing product (or service) development, operations, suppliers, and customer (patient) relations that require less human effort, less space, less capital, and less time to make products (services) with fewer defects to precise customer desires, compared with the previous system” (Chalice 2007, 16). The term *lean* owes to the fact that the process requires less of every input to create the same value. Lean “thinking”, with its emphasis on standardization, attempts to eliminate wasteful inventory and improve processes. As with business model innovation, the manager

should center his focus on the organization's value creating processes, rather than on the organization and the utilization of assets. Lean thinking puts customer value and waste reduction at the center of its philosophy. The final scope is increased quality and efficiency.

Womack and Jones followed up with another book on the topic called "Lean Thinking" where they presented five elementary principles that should potentially contribute to increased efficiency and elimination of waste. Each and every principle builds on the preceding and is essential to the process in its entirety. See figure 1 for the appropriate order of principles. First step is about *identifying value*, i.e. specify the value desired by the customer (here: patient). Second step entails *mapping of the value stream*. In this step, the organization (here: hospital) has to identify a value stream for each single product/service providing it with value and eliminating waste. In a hospital, a typical value stream would for example include admission, diagnosis, treatment and discharge. The third step is about *creating flow* and making the processes run smoothly and quickly. In the fourth step, one has to *establish the pull*, i.e. match internal capacity with demand so that work is done in line with the pull of the customer. Fifth and final step is to *seek perfection*. This should be done in every step in order to increase efficiency and reduce time needed to serve customer.

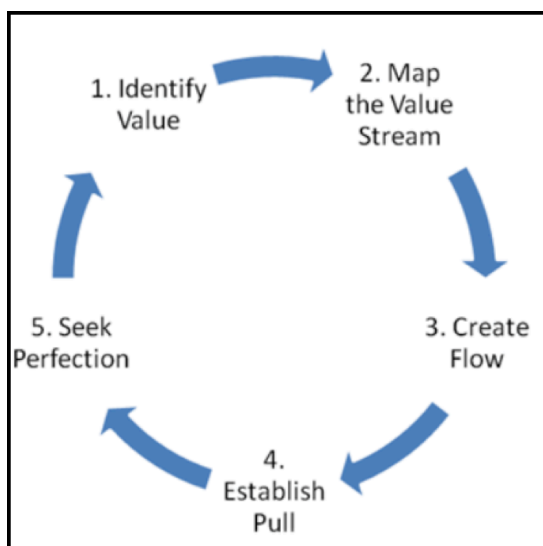


Figure 1. The principles of lean manufacturing. **Source:** The Lean Institute.

3.2.2 Lean at Lillehammer Hospital

Lillehammer hospital is a somatic public hospital in Norway. The hospital has a total of 1800 employees who treats 29,374 day-patients in addition to 65,078 over-

night patients every year. These numbers also include two other divisions located in the same region.

The lean-project was implemented in 2011 with the intention of liberating resources to improve patient treatment, with particular focus on safety and quality of services. The project was supported by the government entity *Innovation Norway* and a local Lean-lab in the nearby town of Gjøvik. Together they initiated two pilot projects at the hospital. The pilots incorporated four departments: the emergency department, the surgical outpatient clinic, the anesthesia department and the operating unit. Are Fjermeros was in charge of managing the project together with two principal leaders, each overseeing a different department. The director of the emergency department, Per Arne Lien, took charge of the lean project within the surgical outpatient clinic, whereas the actual chief of the surgical department, Ellen Pettersen, lead the project within both anesthesia- and operating units. The project was intentionally organized across customary affiliations in order to unite the different departments and make room for increased knowledge and sensitivity towards the various units' routines and responsibilities. In fact, "hospitals are in need of high degree of integration, because often they are organized around functions or disparate departments. As such, they inherently lack the reliable mechanism for integrating the individual departments into a coherent whole". Furthermore, lack of coordination and integration can have costly consequences for hospitals; "Without coordination, lapses in information and process standards result in delays, defects, and extra cost burdens" (Collins and Muthusamy 2007, 45).

3.2.3 Human resources and social capital

At Lillehammer hospital, each clinical department had to appoint a Lean-navigator, which would be in charge of the implementation of the organizational method. In addition, all other employees would be equally involved- and assigned different tasks throughout the project. Jones and Mitchell at the Lean Enterprise Academy UK stresses how "lean has to be locally led and be part of the organization's strategy" (Jones and Mitchell 2006, 2). Lean manufacturing does "not promote vertical command and controls", but rather "the structure in TPS environment [is] decentralized, flat, and [have] a minimum chain of command". Lean production (TPS) requires rethinking of management roles. It is not a top-down problem-solving process through fragmented management decision-making, but rather a collective consciousness of the organizational transformation where the

employees have to take ownership over the decision process. In their article “Applying the Toyota Production System to a Healthcare Organization: A Case Study on a Rural Community Healthcare Provider” on TPS in the healthcare sector, Collins and Muthusamy claim that TPS is effective only when lower-level workers are involved in solving the problems. Indeed they remark how “TPS facilitates creative behaviors and stimulates workers and managers to engage in “experimentation” that is widely recognized as the cornerstone of the learning organization” (Collins and Muthusamy 2007, 44). The way of organizing the lean project encourages commitment and sense of belonging and ownership of the process among the employees. Randi Mølmen, the divisional director at Lillehammer hospital, confirms that the workers at Lillehammer hospital are particularly content with the project as they are considered an essential resource in the process (Fuglehaug 2012, 17).

Improved social capital within the organization is a positive collateral effect of implementing lean. Social capital can be defined as the “shared norms, values and understandings that facilitate co-operation within or among groups” (OECD 2001, 41). Lean thinking encourages the employees to work across teams and with different division. The work-method can potentially contribute to stronger social capital in the work environment as it strengthens sharing of information (improving information flows) and it may lead to more efficient and smooth work relations. According to Norrish et al., “social capital has powerful implication for healthcare organizations” as it contributes to “improved co-ordination of healthcare, increased job satisfaction for staff, greater organizational commitment of healthcare staff, and faster dissemination of evidence-based medicine” (Norrish et al. 2013, 4). It is also associated with superior outcomes for patients as better and more efficient communication leads to more effective- and reduced stays at the hospital. Notwithstanding its potentials, social capital may not be so easy to improve or institutionalize, as it is a vague concept difficult to define and measure. The organization should work on features such as trust, shared values/norms and openness in communication in order to build a strong social capital among its staff (Norrish et al. 2013).

3.2.4 Not faster, just smarter.

The lean process is mainly about reducing waste. At Lillehammer hospital, waste is not only medical devices in excess, but also comprises routines and procedures, which in addition to steal valuable time, have the potential to introduce

misunderstandings and confusion in the treatment cycle. Lillehammer hospital underwent a value stream analysis in order to identify necessary and unnecessary factors in the treatment of patients. The analysis permitted everyone involved to contribute input on what they valued useful-, wasteful-, and/or practices with potential for improvement. Examples of waste at Lillehammer hospital include delays (excessive waiting time), over-processing (e.g. excessive testing and paperwork), inventory, transportation (i.e. move patients from one room to another), motion (e.g. essential supplies stored far away from patient), overproducing (e.g. unnecessary tests and procedures) and deficiencies in diagnosis (Fuglehaug 2012 and Fjermeros 2013). In identifying the value stream at the hospital, the team focused primarily on whom the patient is and what activities produce value for the patient. Randi Mølmen also explains that the hospital management wanted a new way of thinking with increased focus on the processes and the team (i.e. employees) that takes care of the patient. Through the lean project, the hospital aims to reduce wait time for the patients, enhance flow and quality of services as well as reduce variation in quality.

In addition to identifying the value stream, the hospital has also used several visual guides, one being the *lean house*. This stepwise philosophy builds on the fact that every house has to have a fundament before construction can take place and that the same principle counts for the lean project. In fact, through the lean project, Lillehammer hospital aims to build stable, standardized and simplified processes in order to achieve high quality and customer satisfaction. Moreover, the hospital has installed whiteboards around the hospitals where goals and achievement are illustrated to all staff, thus objectives are clear and success is shared.

After successful implementation of the two initial pilot projects, Lillehammer hospital has expanded the lean-project to additional departments, among others the radiology- and neurology departments. The women clinic and pediatric ward are in the process of being incorporated in the project. Lillehammer hospital wishes to become a lean-model for all hospital in the healthcare sector and has chosen “The customer is the king” as their hospital slogan.

3.2.6 Benefits

A study by Helse Midt-Norge (Responsible division for healthcare services in central Norway) concluded that lean production brought beneficial results to hospitals through faster proceedings, shorter wait time, and higher quality in services. Employees experienced less stress in the work environment and experienced

improved control over their everyday work conditions. The quality of 'treatment decisions and diagnosis' improved by 60 % and the number of treatment errors was reduced by 64 % (Fuglehaug 2012). Improvement in quality of treatment was experienced primarily through reduced mortality rates and general errors as well as increased patient satisfaction. The study also recorded higher moral and work environment satisfaction among staff. Lean should ideally give staff more time to tackle unexpected challenges and time for continued improvement of processes.

Reduced wait time is by far the most drastic improvement achieved at Lillehammer hospital. In particular for patients with hip fracture where wait time has been reduced from an average of six hours to today's 29 minutes. The surgical unit has also been able to increase the number of spinal surgeries from an average of two to a total of three interventions per day. Improvements have also been made at the emergency department. Patients who suffer a stroke should in many cases be treated with a medicine called *actilyse*. The wait time for this intervention has been improved from 73 minutes down to 22 minutes on average (Fjermeros 2013).

Budget benefits. As Collins and Muthusamy correctly accentuates; "the healthcare industry is under enormous pressure to reduce costs, increase reliability and quality, and enhance organizational effectiveness" (Collins and Muthusamy 2007, 41). The institute for Healthcare Improvement (IHI) estimated a possible 30 – 40 % of total expenses in healthcare "production" to be complete waste, where the term waste includes material, immaterial, time consuming and unnecessary process steps (Chalice 2007, 17). Thomas Zidel, in his article "A Lean Toolbox", hypothesis over how hospitals, had they been like most commercial companies "could simply increase their selling price to compensate for rising costs and thereby secure a reasonable profit" (Zidel 2006, 8). Hospitals are not like commercial companies and on the contrary, in most countries they are public institutions financed by the state (taxpayers). Accordingly, they have a budget to respect and limited resources. Lillehammer hospital does not report any financial gains as of today, but they have definitely improved their efficiency and quality, which again should result in increased customer satisfaction. Lillehammer is confident that lean will result in a reduction of costs in the long run.

3.2.7 Challenges

It is argued that for any lean effort to succeed both quality systems (operational) and quality cultures (sociotechnical) are needed (Joosten et al. 2009).

Thus lean is not a quick fix, but rather a process that needs involvement and commitment from all concerned stakeholders. It is paramount to involve staff from all levels of the organization, as they are the “experts” to provide valuable input and the ones that have to make the actual changes happen. Resistance within organizations arises when routines are developed around the existing practices and technologies that are in place. These routines may obstacle organizational change and innovation. As the current system is built around broken-in routines and practices, e.g. strategies, communication channels and technology, and consequently, any rupture with the familiar methods may meet resistance from the organization’s staff. Hospitals organizes healthcare around the various internal functions and divisions and as a consequence separation and limited integration across functions is commonplace. Notwithstanding this, functions often depend on each other and, from a patient’s point of view, they are certainly connected. This distinction of functions and person in charge may cause for ambiguity and confusion regarding who is responsible in the different situations. Limited knowledge about the methodology and fear of the unknown may also prevail in the staff. Lean manufacturing may appear as a vague concept and a clear definition of the project should therefore precede the actual implementation. Managing director of the lean project at Lillehammer hospital, Are Fjermeros, points out the importance of involving and encouraging (convince) key personnel (i.e. chief physicians) as they are crucial opinion makers for employees and their actions will be decisive for successful implementation of the lean project.

Public hospitals also face other challenges that oblige them to reduce cost and increase efficiency. The following is a shortlist of key challenges:

- Increased competition (e.g. MinuteClinic)
- Costs are growing while available capital shrinks (e.g. wages and pharmaceuticals/medical devices increase in price).
- Labor shortage forces hospitals to more efficient use of available human resources.
- Aging population presents greater demand for healthcare services.
- Poor quality is expensive, also in terms of lost lives.

- Improved quality and safety standards. Requirements from public regulatory authorities. Quality-performance also creates a good reputation and increased customer flow.
- Demanding consumers
- New technology. Should potentially offer advantages, but also challenges in terms of cost and implementation.

Lillehammer hospital has pointed to costs and resource constraint to be the biggest challenge they face in implementing the lean project, which again impedes the introduction of additional technology and innovation. Increased efficiency of the internal processes has also been stymied by a shortage of key personnel within the hospital (Fjermeros 2013).

3.3 Chapter Conclusion

The abovementioned reasons demonstrates why public healthcare has to increase focus on quality, reduce wait time and aim for a more effective utilization of available resources. Lean manufacturing may not seem as the immediate answer to the previous list. Nonetheless, examining the organizational practices within a hospital there are good grounds for *leaning* the organization. Within any organization, but particularly within hospitals, one will find that responsibilities are not always clear, staff follows unnecessary routines and processes are uncoordinated. A potential result is that “the more complex things become, the greater the chance of errors that undermines quality and/or threaten safety” (Jones and Mitchell 2006, 10). Tests done at Wirral Hospital in the United States revealed how the hospital spent a total of 940 minutes on a single patient, out of which only 100 minutes were spent on the actual treatment of the patient (Jones and Mitchell 2006). Lean thinking is beneficial to the organization as it defines a purpose for the different processes and redesigns them to deliver value with minimum wasted time, effort and cost. Moreover, lean organizes the whole process around the employees and the organization itself. Lean represents an organizational opportunity that requires low level of capital investment. It can be initiated immediately and realized through involvement of the entire team of staff (nurses, doctors, administrators, technicians). As such it is a systemic, holistic and hands-on approach accessible to any healthcare system.

CHAPTER FOUR

Barriers to Innovation in Delivering Healthcare Services

4.1 Introduction

In this chapter I will discuss the various factors that impede the implementation and/or successful execution of innovation in the health care sector. The previous chapters dealt with case specific challenges, whereas in this chapter I will discuss universal challenge to all innovative efforts in the healthcare sector. Many innovations are never fully exploited despite their potential to reduce costs and/or increase efficiency. According to Salter and Tether; “traditional service firms” (e.g. public hospitals) are “among the laggards in adopting technological innovations, working practices and organizational innovations”. They suggest one reason being that “these firms work in a locked system where innovation is difficult” (Salter and Tether 2006, 11). In this chapter I will analyze the different factors that potentially makes the health care sector a locked system inapt for innovation. The analysis will scrutinize the following four factors: different players, resource constraints, dissemination process and technology.

4.2 Different stakeholders

In his article “Bringing Outside Innovation into Health Care”; Mike Wagner highlights that “health care systems are making massive investments in new infrastructure, technology, processes and managerial approaches designed to manage change”. He draws on specific examples such as “electronic health records, Six Sigma and Lean Management” and points out that “all of these efforts are dependent on people both for initial implementation and long term execution” (Wagner 2013). The fact of the matter is that healthcare organizations comprise many different stakeholders, among which we find owners (private vs. public), management, staff (e.g. physicians and nurses) and regulatory authorities. These different parties generally have disparate interest. The following illustrates why conflicts of interest tend to blossom within healthcare.

The owner of a healthcare organization can be private or public. In most cases, owners either want to minimize cost (public) and/or maximize profits (private) and consequently, they prioritize aspects related to cost containment and profitability of the organization. Insurance companies also fall into this category (applicable chiefly to private healthcare countries) as they finance the bill for most hospitalized

patients. They “pay for care of the sick and not for improving people’s health status” and consequently value cost containment more than quality (Herzinger 2006).

The management is drawn between the owner and the staff and “face inconsistent or conflicting external stakeholder expectations” (Lega et al. 2013, S48). In general, they aim for enhanced efficiency and productivity as well as cost containment as they have budgets to respect. Management can have limited knowledge about healthcare as a profession and may disregard the opinions of physicians and other caregivers as they find it difficult to relate to their professional challenges. Moreover, being hired and paid by the owners of the hospital, the management will respond primarily to their instructions, possibly also out of fear for their personal career.

Staff (i.e. doctors, nurses, technicians etc.) on the other hand, should ideally seek improved clinical outcomes through improved diagnosis and treatment. Moreover, they want to protect their professional integrity, clinical autonomy and reputation. Doctors and nurses experience a strong sense of professional integrity to their respective profession and consequentially a professional divide develops where confrontations and power struggles between the different professions are not uncommon. The different parties may disagree with each other as well as with the management in various situations. Orthopedic surgeon Dr. Hofgaard observes that the medical field is a closed profession with long tradition and strong professional culture, which accordingly makes changes in the old habits and change through innovation difficult. An introduction of new innovation or technology often implies significant changes in who does what, and these shifts in responsibility may result in disapproval and conflicts. Mike Wagner suggests that healthcare organizations are dependent on a strong and resilient staff culture in order to succeed in implementing disruptive and/or sustaining changes. In particular, he suggests that the staff has to have an open mind, welcome change, experiment and innovate as well as have the courage to make difficult decisions. Moreover, Wagner suggests that a healthcare organization should strive to import new knowledge, strategically employ their existing base of skills and disseminate leadership across different ranks. (Wagner 2013).

The customer wants improved patient experience, reduced wait time and reduced delays. Patients are increasingly informed and sophisticated in their expectations to the healthcare services. As Herzinger comments in her article “Six

Forces that can drive Innovation – or kill it”, customers are more attentive to personal health and increasingly demanding. She remarks how “the passive term “patient” seems outdated” for this group of customers. Herzinger also suggests that “a company that recognizes and leverages consumers’ growing sense of empowerment, and actual power, can greatly enhance the adoption of an innovation” (Herzinger 2006).

Regulatory authorities and public policies require reduced risks and improved patient safety and as “adoption of healthcare innovations is often regulated by laws, changes become more laborious” (Einspruch and Omachonu 2010, 9). High requirements and strict control of practices makes little room for innovation as management and physicians may prefer to adopt practices that have worked in the past and are approved by authorities. The authors of the article “Disruptive Innovation in Health Care Delivery” remark that, “although written with good intentions, these regulations unintentionally trap health care in high-cost models of care” (Hwang and Christensen 2008)

In conclusion, “resistance by all parties is frustrating, time-consuming, and expensive” (Dorn et al., 2013) and “unless innovators recognize and try to work with the complex interests of the different players, they will see their efforts stymied” (Herzinger 2006). Accordingly, the introduction and implementation of new and innovative solutions in the healthcare sector requires innovators to consider all key stakeholders and their disparate needs and try to align their interest in order to have the most successful outcome in their innovative efforts. An article by PwC on health care suggests that healthcare leaders should aim to coordinate the care and think of the whole chain of treatment for the patient. Bringing all parties together and making an effort to converge the different efforts through trade-offs and compromises is a potential solution to the problem. As the authors of the article “Four Steps to Resolving Conflicts in Health Care” comment, to “use a structured process and inclusion of all key stakeholders” is essential (Dorn et al. 2013). They suggest that this process should require from 10 minutes to 10 days depending on the number of stakeholders and the complexity of the healthcare system. Moreover, as previously emphasized in the case of lean at Lillehammer hospital, “people only truly embrace solutions that they help create” (Dorn et al. 2013).

4.4 Resource constraints

As earlier discussed in the chapter on organizational innovation, the healthcare industry differs from other commercial industries when it comes to pricing of goods and services. Public hospitals are funded by taxpayer's money and have budgets to respect. Increases in cost of input does not automatically transform into increases in the price of the product. When the government is the primary funder of healthcare services, the systems undergoes strict control on costs, it has less money to spend and consequently, keeping costs low for customers translates into squeezing margins for innovators.

Healthcare systems also comprise a complex payment system as in most countries the funds derive either from the government or from an insurance company. The financier (client paying for the service) is different from the customer (patient) receiving the good and/or service. Conflicts of interest arises as the funder's "perception of product's value, which determines the level of reimbursement, may differ from patients'. The complexity of the payment system may also create problems for private healthcare providers who are reliant on out-side sources of capital funding (e.g. venture capitalist) to give birth to their innovation (Herzinger 2006).

Interrelated to the issue of different players, is the problem of tax-based healthcare systems that requires more resources. "The characteristic response of physicians is to press politicians for more funding of the health care system, meanwhile "little attention [is] paid to the effectiveness or efficiency of health care processes" (Lega et al. 2013, S46). The physician's main objective is to cure the patient; accordingly, less attention is granted to cost control, effective management and the sustainability of the organization/hospital. A plausible solution to this issue is to educate and inform all caregivers on the value and cost functions within the healthcare system in order to create awareness in the work environment and encourage cost-effective alternatives (Cosgrove, 2013).

4.3 Dissemination

According to Berwick in his article "Disseminating Innovations in Health Care", there are three basic elements that influence the dissemination of an innovation. The elements are "(1) the perception of the innovation, (2) characteristics of the people who adopt the innovation, or fail to do so, and (3) contextual factors, especially involving communication, leadership, and management" (Berwick 2003, 1970). With

respect to the first element, the author accentuates how “change spreads faster when they have the five perceived attributes: benefit, compatibility, simplicity, trialability, and observability” (Berwick, 1971). The second element involves the adopter of the innovation. The process of adoption is explained through the model of a S-curve involving five types of adopters: innovators, early adopters, majority adopters, late adopters and laggards. The model is based on technical features of the innovation itself and the social factors that shape the decision to adopt. Social processes include the cognitive and psychological attitudes of individuals and groups shape the willingness to choose to adopt an innovation. For example, social networks, persuasion, and word of mouth are all influential on personal choices. Economic models of diffusion highlight the dangers of being locked into a particular technology or system, making it difficult for users to switch to new and better options in the future. As mentioned earlier, hospitals and its staff tend to be traditional in their work approach and lack proper channels of communication. Organizational innovations such as lean production might amend this problem by encouraging cross-divisional communication and cooperation. The third and last element, contextual factors, involves the management of an organization. As they have the power to either “encourage and support, or discourage and impede, the actual processes of spread”, the author Berwick emphasizes how healthcare needs “leaders who understand innovation and how it spreads” (Berwick, 1972 - 1974).

An additional reason why dissemination may be difficult relates to the abovementioned problem of different players and the complexity of collaboration and power struggles present between these players. If these players feel threatened or less important by the introduction of an innovation, they are susceptible to oppose the implementation of this innovation. A study made by a research team in Norway, suggest that several innovations with the potential to improve quality and efficiency in patient treatment never are implemented as the change tends to break with the traditional and established power relations within the organization/hospital (Mork et al. 2010). This is confirmed by Danielle Cass’ article “How to Get Health Care Innovations to Take Off” where she states that the real obstacles to spreading innovation is “fear of change, resource constraints and slow consensus-based decision making” (Cass 2013).

4.5 Technology

Technology per se may also obstacle the success of an innovation. As mentioned earlier in this chapter, implementation and execution is dependent on people and thus “the failure to appropriately use technology and change management creates even more costs”. The success of technological innovation lies in the hands of the management and the staff responsible for it. Adler-Milstein comments in her article “Health Care Requires Big Changes to Complement New IT” that if “hospitals and medical practices don’t support them [e.g. electronic medical record] with organizational changes such as more training” then the expected efficiency and quality gains will not be realized. In fact, a study made by the MIT Sloan School revealed how organizations that fails to invest in substantial and supporting organizational changes, often ends up worse off than before investing in new technology (Adler-Milstein 2009).

Moreover, it is also a question of knowing *when* to adopt. As Herzinger comments “move to early, and the infrastructure needed to support the innovation may not yet be in place; wait too long, and the time to gain competitive advantage may have passed” (Herzinger 2006). In addition to a question of *what* to adopt. The management should evaluate whether an innovation targets its objective. Technological innovations are often expensive and extensive, but the management and organization has to evaluate whether its implementation produce the corresponding gains and benefits. A contemporary example is the collection of *big data*. Patients are compiling loads of information on their health status using modern technology. The personal health tracking through the use of smart phones and wearable gadgets is a part of the trend known as ‘quantified self movement’. Many actors in the health sector are questioning who will be responsible for- and process/analyze this information and to what extent is it truly necessary (Vogt et al. 2014). In the healthcare sector, one cannot produce technology for technology’s own sake; on the contrary, it should have a clear objective and be for the sake of improving healthcare. Moreover, “technology development and implementation requires significant capital investments, beyond the reach of many health organizations” (Herzinger 2006). Thus, in efforts to increase efficiency and/or reduce costs through innovation, the implementer has to balance these requirements with the human needs for healthcare.

CHAPTER FIVE

FINAL REMARKS

This paper has discussed innovation in the delivery of healthcare services where the ambition has been to analyze whether innovation could bring benefits to the industry by increasing efficiency and financial sustainability. Case studies of two different healthcare providers have examined the use of business model innovation in the private sector and organizational innovation in the public sector. The results have been satisfying in both cases, as both innovation models have brought positive effects within their respective environments. Inherent to the definition of business model innovation is the introduction of a completely new way of delivering services. As the case studies have revealed, this model differs greatly from the model discussed under organizational innovation. To make a distinction between the two, I would consider MinuteClinic closer to a disruptive innovation, and lean production closer to a sustaining innovation. Nevertheless, as mentioned in the conclusion of chapter two, the business model of MinuteClinic has not completely disrupted the traditional healthcare providers and both stakeholders are needed in today's health society. For the abovementioned reason, a comparative study of the two models is challenging. Still there are common elements worthwhile to dwell upon.

The innovation models succeeded in increasing efficiency, although in different ways as the starting-point and scope are disparate.

They face similar obstacles in implementation. It is apparent that lean production experiences more resistance from within the organizations. MinuteClinic, on the other hand, faces external obstacles to a greater extent.

Finally, the models have a similar approach to innovation as they are both consumer-driven and focus on value creation for the patient as opposed to value capturing for the organization. Both models approach cost containment without emphasis on cost control through rationing. On the contrary, they focus on value-creating activities. PricewaterhouseCooper's report *HealthCast* indicates this type of approach as an essential asset for healthcare systems in the future; "The move from cost containment to value is a profound and genuine change. The relentless pursuit of lower costs as the single goal of healthcare management is not tenable in the long run as it was rejected by professionals, patients and the public at large (PwC 2010).

The innovation models discussed in this paper offer important insight on how to improve the healthcare delivery process. My understanding is that future growth can be achieved through continued innovation and by leveraging technological advances. Most important of all is the actual attempt, as Dodgson remarks “withdrawal from the effort provides little advantage and may create even long-term risks. It is those firms that try, fail, learn, try again, and then perhaps succeed that are successful innovators” (Dodgson 2008, 92).

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