

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economic Theories



Diploma Thesis

**Optimization of hospital management of Nemocnice
Kadaň s.r.o., focused on service reporting and payment
for provided healthcare by insurance companies.**

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Bc. Denisa Hossnerová

Economics and Management
Economics and Management

Thesis title

Optimization of hospital management at Nemocnice Kadaň s.r.o., focused on service reporting and payment for provided healthcare by insurance companies.

Objectives of thesis

The main, general aim of this thesis is to find new ways how to improve the management of Nemocnice Kadaň s.r.o., which will help the the director to maximize the welfare of stakeholders. Because the thesis is divided into 2 main parts, each of them have several goals.

The 3 sub goals of theoretical part are

- to describe healthcare system and health insurance companies in CR,
- to explain the principle of reporting healthcare and basic terms used by health insurance companies,
- introduction of IS used by hospitals and medical facilities,

The two main goals of the second, practical part are to analyse gathered data and evaluate the financial and overall development of Nemocnice Kadaň from 2010 to 2019, and then based on the studies of past development and analysis of the financial situation, create strategy for the hospital management to maximize profit in 2020 and long-term plan including recommendation.

Methodology

Quantitative secondary data will be obtained from the hospital. Qualitative data will be obtained by an interview with the director and other managers of this. Gathered data will be then evaluated and analysed.

Quantitative data will be shown graphically. Data will be analysed by several financial indicators and by indicators set by new Act every year by Czech ministry of health. Later, relationship between qualitative and quantitative data will be found by association.

The proposed extent of the thesis

x

Keywords

hospital management, optimization, healthcare, insurance company, Nemocnice Kadaň s.r.o.

Recommended information sources

DRBAL, C., 2005. Česká zdravotní politika a její východiska. Praha: Galén. ISBN 80-7262-340-0

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Declaration

I declare that I have worked on my diploma thesis titled "Optimization of hospital management of Nemocnice Kadaň s.r.o., focused on service reporting and payment for provided healthcare by insurance companies." by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 06. 04. 2020

Bc. Denisa Hossnerová

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Optimization of hospital management of Nemocnice Kadaň s.r.o., focused on service reporting and payment for provided healthcare by insurance companies.

Abstract

This diploma thesis focuses on management of a hospital in the Czech town of Kadaň. Its main purpose is to, based on a qualitative and a quantitative research, analyse the historical development of the hospital and find new possible management decision which would lead to the maximization of stakeholders' welfare.

The theoretical part includes several subparts. These include definition of management and its basic terms, explanation of healthcare system in the Czech Republic and different providers of medical care, summary of the process of payment for medical care by health insurance companies, and also the important part of IT programme and influence of it's setting on the whole process.

The theoretical findings are later on used in the practical part, where they are used as a basis for analysis of gathered data from actual research. The executed research was qualitative as well as quantitative. Quantitative research evaluated data, that were collected from the hospital, qualitative research consisted of an interview with the hospital high management. All findings are at the end concluded into recommendations on what next steps should be taken to maximize welfare of stakeholders.

Keywords: hospital management, optimization, healthcare, insurance company, Nemocnice Kadaň s.r.o.

Optimalizace řízení v Nemocnice Kadaň s.r.o., se zaměřením na vykazování a platbu poskytnuté péče zdravotními pojišťovnami.

Abstrakt

Tato diplomová práce se zaměřuje na řízení nemocnice v Kadani. Jejím hlavním cílem je, na základě kvalitativního a kvantitativního výzkumu, zanalyzovat historický vývoj nemocnice a najít nová možná manažerská rozhodnutí, který by mohla vést k maximalizaci přínosu všech zúčastněných stran.

Teoretická část je rozdělena na několik částí. Tyto části definují management a základní pojmy s ním spojené, vysvětlení zdravotnického systému v České republice, představení různých typů poskytovatelů zdravotní péče, celkový přehled proplácení zdravotní péče zdravotními pojišťovnami, a také to, jakou roli hrají v celém procesu informační systémy a programy a jejich nastavení.

Teoretické poznatky jsou poté použity v praktické části, kde jsou použity jako základ analýzy získaných dat z výzkumu. Proveden byl kvalitativní i kvantitativní výzkum. Kvantitativní výzkum vyhodnotil data, která byla získána od nemocnice, kvalitativní výzkum se skládal z rozhovoru s relevantními členy vedení nemocnice. Všechny poznatky jsou na konec zformovány do doporučení dalších kroků pro maximalizaci přínosu zúčastněných stran.

Klíčová slova: nemocnice, management, optimalizace, zdravotnictví, zdravotní pojišťovna, Nemocnice Kadaň s.r.o.

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Introduction

Human health is undoubtedly one of the most valuable assets that we receive in our lives. The human body as an object of health care interest, or the whole health care system, has fascinated humanity throughout its existence. The core of the matter is always the same thing - preventing disease, helping a person back to a state of complete health, or bringing the quality of his subsequent life as close to a state of complete health.

I grew up in a medical environment as both of my parents are doctors and have been interested in their work ever since I was little. As I got older, I am very interested and close to the management of any kind of business. I decided to combine these two areas of my interest in this diploma thesis and connected it to actually bring some benefit to Nemocnice Kadaň s.r.o.

Nemocnice Kadaň is also important to me, as it is located in my hometown in the Ústí region where I grew up and I have family members working in this enterprise. I spend 4 months in 2018 working in this hospital at the controlling department, where I was involved in the process of reporting executed care to the insurance companies. During this time, I began to notice logistic gaps in the whole process and was inspired to write my final thesis focusing on this problematic.

Objectives and Methodology

1.1 Objectives

The main, general objective of this thesis is to find new ways how to improve the management of Nemocnice Kadaň s.r.o., which will help the the director to maximize the welfare of stakeholders. Because the thesis is divided into 2 main parts, each of them has several goals.

Theoretical part

The 3 sub goals of theoretical part are

- describe healthcare system and health insurance companies in the Czech Republic,
- explain the principle of reporting healthcare and basic terms used by health insurance companies,
- introduce of information systems (IS) used by hospitals and medical facilities,

Practical part

The two main goals of the second part are to analyse gathered data and evaluate the financial and overall development of Nemocnice Kadaň from 2010 to 2019. Then, based on the studies of past development and analysis of the financial situation, create strategy for the hospital management to maximize profit in 2020 and propose a long-term plan including recommendation.

There are 3 research questions, that will be addressed in the thesis:

- How did change of management in November 2016 influence the economic performance of the hospital?
- How can the setting of IS influence income of the hospital?
- What leadership steps will lead to maximization of welfare?

1.2 Methodology

Literature Review

Literature review will be used as a method of collecting information mostly for the theoretical part. English literature is going to be used for the review of management,

optimization and management, however literature review of the Czech insurance system will be done from Czech resource, as no English resources are available.

Interview

Qualitative data will be gathered by an interview with the director of the hospital. The collected data will provide a sight into the background of the current management and some of the made decisions. If necessary, additional consultations with the relevant people from the management will be scheduled.

Observation

The purpose of this type of research is to gather more reliable insights. I worked in the controlling department in the hospital for 4 months in 2018, therefore knowledge gathered from this period will be used in evaluating the hospital's performance and actions.

Document analysis

Quantitative secondary data will be collected form the annual financial reports of the hospital. These reports are available to the public on the websites of the hospital. Data will be shown graphically and several financial indicators will be analysed.

The hospital will also provide internal table with incomes from the insurance companies.

2 Theoretical part

The theoretical part is divided into 8 subcategories. Each subcategory is connected to the topic of the diploma thesis and has to be theoretically described and elaborated in order to create strong foundation for practical part.

2.1 Management

2.1.1 Definition of basic terms

To understand the problematics properly it is important to define the most used terms. This should prevent possible future misunderstandings in the thesis.

Management

According to Plevová (2012) and Jarošová (2006), the word management itself can have several different meanings. The four meanings are:

- *a certain way of leading people* - the art of achieving the goals of an organization with hands and heads of others
- *leaders of an organization* – usually a team of people working together and leading the organization
- *subject of a study and research* – where management is seen as scientific discipline
- *human skill and activity* - typical activities such as decision making, organizing, planning, controlling, leading people

Sonja Kukreja points out that some people see management not only as a science, but also as an art. There are many debates on this topic; however, most individuals working in management agree that some form of formal academic management background helps in managing successfully.

Kukreja also mentions several definitions by different management thinkers. “For example, Van Fleet and Peterson define management, ‘*as a set of activities directed at the efficient and effective utilization of resources in the pursuit of one or more goals.*’

Megginson, Mosley and Pietri define management as ‘*working with human, financial and physical resources to achieve organizational objectives by performing the planning, organizing, leading and controlling functions* ‘.

Kreitner's definition of management: *'Management is a problem-solving process of effectively achieving organizational objectives through the efficient use of scarce resources in a changing environment'*.

According to F.W. Taylor, *'Management is an art of knowing what to do, when to do and see that it is done in the best and cheapest way'*.

According to Harold Koontz, *'Management is an art of getting things done through and with the people in formally organized groups. It is an art of creating an environment in which people can perform and individuals and can co-operate towards attainment of group goals.'*

Manager

Management is not only tasks and discipline, but also people. Therefore, every achievement of management in the achievement of a manager, which can be applied to any failure as well. (Drucker, 2011)

Manager is primarily a profession and its bearer is responsible for achieving the goals of organizational units entrusted to it. He or she uses a team of collaborators and provided resources to do so. From that it follows that the role of a manager is mainly to use experts, resources and opportunities to achieve the set objectives. The decisive factor of the manager's success is the utilisation of entrusted potential. (Fiala, 2019)

According to Jarošová (2006), an ideal manager should have certain innate and learned properties. Among the innate is a need to lead, a need to help, empathy, appropriate temperament, and intelligence. On the other hand, learned properties of an ideal manager include professional understanding of the issue, economic knowledge, socio-psychological knowledge, knowledge of management methods, and good mental and physical condition. However, the last one, mental and physical condition, is on the border between innate and learned.

2.1.2 Brief history of management

Management all started with the emergence of industrial production and its expansion. However, until the end of 19th century it was theory and methodology based solely on experience. Efforts to improve management began simultaneously in several European countries and the USA, however efforts in the USA were most apparent and brought first major results, therefore the USA is considered as the cradle of management.

The history of management can be divided into 5 development stages and one pre-stage, as stated by Šajdlerová and Konečný (2007).

The 19th and 20th century, when intensified efforts were made to recognize the social phenomena associated with governance and when the first basic management theories were created, was considered the **pre-stage of management**. At that time H.V. Poor was known as the first author who tried to define management.

The first development stage began at the beginning of the 20th century, - this stage was called the **classical, traditional stage**. Methods of scientific management were introduced, incentives were applied in the form of task wages, labour was standardized, and general principles of company management were formed, as well as an ideal type of organization. This stage was divided into 3 main directions: scientific management, administrative management, and bureaucratic model.

The second development stage was represented by **neoclassical theory of interpersonal management**. Representatives of this stage focused on exploring human relationships, psychological motives of peoples' behaviour at work, cooperation and conflicts, communication, leadership, and non-formal organization. It was a new approach to management theory over classical Taylorism, which basically understood man as a machine and did not consider their behaviour or needs.

In the third development stage of management the **modern theories** were more developed. Knowledge from new sciences, such as cybernetics, general theory of systems, operational analysis, and computer technology were used. This stage was divided into three main directions: process approaches, system approaches, and quantitative-mathematical approaches.

The fourth development stage was represented by **pragmatic empirical approach**. It was based on analysis, evaluation and generalization of managerial practice knowledge. It was mixture of experience, opinions and recommendations for practice-based management. It created concrete recommendations rather than organized management theory.

The last development stage includes other **management development tendencies**. Here can be mentioned, for example, participatory approaches, reengineering, innovative approaches, information management, and more.

2.1.3 Types of management

There are also 3 different levels of management. Managers of each level of management have different roles and positions in the company hierarchy. At smaller firms, some levels might be missing or can be combined.

Supervisory managers

Supervisory managers are only one level above executive employees. They are responsible for division and control of performance and fulfilment of tasks. They can also serve as a feedback tool between workers and middle management. An example of supervisory manager is a shift or a workshop manager.

Middle managers

Middle management is usually, especially in bigger firms, a larger group of leading employees, whose job is to obtain and provide information. An example of such managers are leaders of professional or functional units.

TOP managers

The highest level of managers is TOP management. These managers have a special position due to close ties to the owners of a business. They assume responsibility for the owners, coordinate all activities of the business, create an economic policy of the business and the overall results of the business are highly dependent on their actions. (Šajdlerová and Konečný, 2007)

2.1.4 Manager in healthcare

Types of managers from the previous chapter can be easily applied to the medical environment. In broader sense, any nurse can be considered a manager, because even in standard work he or she must apply basic managerial skills (mentioned in chapter 2.1.1).

Providing excellent medical care to patients requires effective management of the facility. Executives in medical facilities are in various positions. There are members of statutory bodies, heads of clinical workplaces, senior doctors, etc.. All of these people hold management positions and have a responsibility and trust of their subordinates.

Managers in healthcare are also affected by the fact, that they work in a sector that is monitored more closely than other sectors. A healthcare manager is predominantly qualified to pursue a medical profession and is bound by professional ethics and ethical codes of professional organizations. (Plevová and collective, 2012)

2.2 Optimization

Optimization is a process, that can be used in many fields. It is predominantly used in field of informatics and mathematics, but it always comes down to process optimization – for example business process optimization, manufacturing process optimization, etc. Process optimization is one of the best ways how to practically adjust operating set of processes of an organization in order to achieve best asset utilization and performance. Virtually all process optimizations endeavour to directly improve profitability, return on investment (ROI) or any other kind of return, preferably in an immediately quantifiable way. (Poe, Mokhatab, 2017)

This definition of optimization is very similar to the one from Raida, who states, that optimization is a process of finding the most suitable (optimal) solution, the shortest (optimal) way, using the cheapest and at the same time the best quality (optimal) goods. (2004)

During optimization we change the so-called state variables of the optimized object and observe the effect of changing these variables on the resulting parameters. Thus, optimization is a search for values of system state variables that ensure that the system achieves the desired parameters or that the system parameters are as close as possible to the desired parameters. The deviation of the current system parameters is described by the criterial, cost, error function. Optimization itself can then be understood as finding the minimum or maximum of the criterion function by changing the values of the state variables. (Raida, 2004)

2.3 Stakeholders

Stakeholders are organizations, groups or individuals who are impacted by the outcome of a project. They have an interest in the success of the project, and can be inside or outside the organization that is sponsoring the project. Stakeholders can have both – positive or negative influence on the project. (Landau, 2017)

Although there are still debates regarding which stakeholders deserve consideration, a widely accepted interpretation refers to shareholders, customers, employees, suppliers and the local community. (Smith, 2003) Although, this list is usually modified according to the type of business or field it is related to.

Shareholder vs. Stakeholder theory

“Shareholders are always stakeholders in a corporation, but stakeholders are not always shareholders. A shareholder owns part of a public company through shares of stock, while a stakeholder has an interest in the performance of a company for reasons other than stock performance or appreciation. These reasons often mean that the stakeholder has a greater need for the company to succeed over a longer term.” (Banton, 2019)

Jeff Smith compares shareholder and stakeholder theory and debates which group should be considered more by managers. Both of these theories are normative theories about corporate social responsibility and are dictating what ought to be the corporation’s role. (2003)

Shareholder theory states, that managers should use capital in order that has been authorized by shareholders, which would then lead to the increase of shareholder’s profit. Milton Friedman was a supporter of this theory. He wrote: “There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it...engages in open and free competition, without deception or fraud.”

Stakeholder theory on the other hand claims, that managers have a duty to both the corporation’s shareholders and stakeholders. “According to the stakeholder theory, managers are agents of all stakeholders and have two responsibilities: to ensure that the ethical rights of no stakeholders are violated and to balance the legitimate interests of the stakeholders when making decisions.” The main objective is to balance the maximization of profit with a long-term ability of the corporation to remain a going concern. (Smith, 2003)

2.4 Healthcare systems

Health is one of the most important, if not the most important, aspect of life. Everyone, at some point in their life, is treated at a medical facility. The healthcare system of the country affects the lives of all its inhabitants.

In the past a few different healthcare systems were formed. Towards the end of 18th century a rapid economic, technical, and social development connected to the industrialization process started, which then lasted over the next century. Many inventions and discoveries have begun to make one's life easier, and have pushed one's quality of life for the better. Along with changes in social order in this period, which significantly strengthened state power, but also significantly accelerated unequal distribution of wealth among the population, the demand for social solidarity began to emerge. (Bulisová, 2009) And not only solidarity of the rich with the poor, but also of the young with the old, single with the families, and solidarity of the health with the unhealthy.

2.4.1 Definition of basic terms

Health

Health is not only the absence of illness, but health is a holistic concept. According to the World Health Organization: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." The term health is also mentioned in the legal order of Czech Republic, most specifically in the Act n. 20/1966 Sb. of care and health of people: "Health is one of the basic preconditions for the happy and creative life of the individual and of society at large. The right to health care is one of the basic civil rights guaranteed by the Constitution of the Czech Republic. The pursuit of the best possible health of the people is one of the main tasks of society, all organizations and every individual."

Medical care

Medical care represents the mere set of processes and acts which aim to sustain and prolong life, to maintain and improve health, to protect, to consolidate and develop the health of individuals, and to develop healthy future generations. (Vondráček, Bouška, 2004) Therefore, care should be provided primarily by doctors and trained medical staff and should be executed under strict rules and procedures and should fulfil principles set by

the system. This definition is, for the purpose of this work, only understood as in classical medicine and does not deal with any other alternative approaches to medicine.

Healthcare

Healthcare can be explained as a complex system of medical services, together with a system of medical facilities and other medical organizations, providing medical care altogether. (Madar, 2002)

This system enables and secures provision of medical care and creates conditions for the real fulfilment of the constitutionally guaranteed right to life and the right to health protection as guaranteed by the Charter of Fundamental Rights and Freedoms.

2.4.2 Types of healthcare systems

Healthcare systems, which were gradually established and formed in the more advanced European countries during the industrial revolution, have been based on two basic pillars since the very beginning:

- efforts to suppress the root causes of morbidity and mortality
- to strive for the economic availability of medical assistance and care for the broadest population (Drbal, 2005)

Bismarck model

This model was introduced in Germany between years 1883 and 1889 by the Chancellor Otto von Bismarck. The insurance idea that this system has developed into a modern form, especially as a public law institute, appears in historical sources as early as the Middle Ages. Insurance means a system that helps to reduce the unwanted impact of various life, but also other events such as natural disasters, theft, business risks, accidents, road accidents, loss of earnings or health care expenses. (Gladkij, 2003)

In this model the healthcare is provided based on mandatory health insurance. Public health insurance is based on the principle of social solidarity and sharing of health risk by all citizens. Everyone pays according to their income and receives healthcare according to their needs. This system is only possible due to a certain amount of solidarity, which can be seen on the fact that 90% of all money coming into the healthcare is used by 10% of the neediest patients. (Durdisová, 2005)

In this system providers of healthcare are independent economic operators and have contracts with the relevant health insurance companies where the patients are registered. Health service providers compete for patients, who in most cases are welcome clients in doctors' ambulances, hospitals and other healthcare facilities. At the same time, every insured patient brings with him certain funds from his insurance company when visiting a medical facility. Ambulance doctors have the status of independent entrepreneurs doing business under special legal regulations in this system. (Vurm, 2007)

The main advantage of the health system based on public health insurance is the high availability of basic health care for all inhabitants, even the poor. The system also maintains a sufficient diversity and supply of health services. Due to its nature, a considerable amount of money flows into this system and it is possible to finance expensive projects. A relatively dense network of healthcare facilities is maintained, and the continuity of health services seems quite appropriate. The system emphasizes preventive care and reasonable costs.

On the other hand, one disadvantage of this system is the fact that health insurance companies consume a certain amount of the funds - in most countries it is 2-4% of the total amount collected for insurance. (Vurm, 2007)

This model is applied in most Western and Central European countries, eg Austria, Germany, France, Holland, Belgium, Poland, Slovakia. Czechoslovakia, respectively the Czech Republic, also switched to the system closest to us historically and traditionally after 1989.

Beveridge model

The National Health Service model was developed in the UK based on the Beveridge Report of 1942. In the Beveridge model, healthcare is provided to all citizens, regardless of their ability to pay.

Healthcare is a service that the state buys for its citizens. It is clear, that the state has a central role in this model. The state is the predominant, if not exclusive, owner of medical facilities. Healthcare is mainly financed from taxes, from the state budget. More than 90% of healthcare expenditures are covered by public funds. (Vurm, 2007)

Most specialized outpatient facilities, laboratories and specialized workplaces are part of hospitals. Hospitals are part of the National Health Service, as well as, private surgery practitioners and specialists, dentists, pharmacies and most sanatoriums and

nursing care facilities. Doctors in hospitals are paid a salary, other doctors receive lump-sum payments for registered citizens or for the provided services. General practitioners are, as so-called family doctors, private individuals who have a contractual employment relationship with the relevant health insurance company or with the relevant regional or municipal authority.

The cost of healthcare is reasonable. However, long waiting times for non-urgent medical interventions are a drawback. This has become a chronic problem in the UK and it is causing patients to seek treatment in other countries.

This type of financing is widespread mainly in the UK, Canada, in various modifications also in Denmark, Norway, Finland, Sweden, Italy, Greece, Spain and Portugal. (Vurm, 2007)

Market healthcare model

Market healthcare is a health system based on individual responsibility of citizens. The state does not guarantee health care for all, only for some social groups, in the form of state health programs (such as pensioners over 65 and those whose income is below the officially set minimum subsistence level). Healthcare costs are covered by commercial (private) health insurance and there is no public mandatory health insurance. A model example is the US market healthcare (although there was a tendency to create a social healthcare model by former president Barack Obama).

The advantage of this model is high quality medical care, high doctor salaries and more money in the system for research and development. The biggest disadvantage of this model is clear – social inequality results in a large proportion of the population lacking insurance. This can lead to providing excessive care to people with insurance, litigation, and high administrative costs. As well as, that serious illness is perceived as an economic threat to individuals and families and is the most common cause of personal bankruptcies (MEFANET, 2015)

Semashko model

This model is no longer in use, but was implemented in Soviet Union in the 1920s and it was later applied in Czechoslovakia (more in chapter 2.4.3). This system was fully centralized. Although the proclaimed goals were progressive for their time, their

implementation was only formal. Political dirigisme and a lack of economic resources have accompanied the development of healthcare for the entire duration of this totalitarian state.

The relative advantage of this centralized healthcare system, which was fully within the jurisdiction of the State and also in its possession, was the availability of healthcare for the entire population. Health services were provided "free of charge".

However, since the model was run by directive management and centralization, it was also defined by limited freedom of doctor choice, low motivation of doctors (due to table-set evaluation only), lack of medications, which altogether led to an increase of grey economy and corruption. This was mainly due to the fact that healthcare was considered a non-productive sector, resulting in its low economic priority. (Gladkij, 2003)

2.4.3 History of Czech healthcare system

From the first mentions to the First republic

Professional literature does not mention what exactly was the first written regulation in territory of today's Czech Republic. The first documented source of legal codification of health issues was probably the regulations of cities related to the great plague epidemic of the 17th century during the Thirty Years War. These regulations should have had a preventive effect against the further spread of the plague.

Further interest in human body and invention of the letterpress contributed significantly to education in this area. Since the Church was the bearer of knowledge at this time, medical knowledge and dogmas began to spread in monasteries and other religious facilities.

A real turning point came during the reign of Maria Theresa and Joseph II. The healthcare system began to be organized by centralized administration and according to patents from 1752 and 1753, all medical personnel (from gourmets, healers, oculists to breakers and urethral cutters) was under new regulations. It was forbidden for anyone without trial and authorization to conduct treatment.

In 1887 a new hierarchy was implemented. One year later a new system of health insurance was introduced. This system of insurance, based on the principle of solidarity, was then adopted into the legal order of the independent First Czechoslovak Republic.

Healthcare system of The First Republic

During the First Republic there lived around 15 million people and roughly a half of them was insured through the health insurance system. The First Republic health system was thus based on the principle of compulsory health insurance. However, health insurance only applied to wage earners. At that time there were about three hundred health insurance companies.

During the First Republic doctors were paid in several different ways - payment for performance, per case of illness, payment per head or year, and flat rate. The network of health care facilities consisted of private surgeries providing outpatient care, inpatient treatment institutions, social and health care facilities and private treatment institutions.

Socialist healthcare system

In 1948, sickness and pension insurance were unified into one compulsory system by the National Insurance Act. Outpatient care was provided mostly by doctors with private practices. The spa and springs were nationalized, hospitals and medical institutions were nationalized, as well as the medical industry and the distribution of medicines.

Semashko model, which was explained in the previous chapter was implemented in 1951. The mandatory health insurance system was abolished and health care was fully in the hands of the state. The reimbursement of health services began to be financed from taxes through the state budget.

Development after the Revolution

With the end of Communist regime new changes were made also in the healthcare system. These changes were already proposed in 1990. The new system was coming out of Bismarck insurance model, which was used in the First Republic and seemed to work well. This brings us to the next chapter, where the current system is discussed more. (Eim, 2008)

2.4.4 Current healthcare system in the Czech Republic

As indicated in previous chapter, the 1990s brought many changes and new Acts, which are still in force until today. Three main changes were privatization of health care providers, introduction of an insurance system and linking the performance of providers with their income. In 1991 the General Health Insurance Company (known as VZP in Czech) was founded by a new Act, but to maintain competitive environment a new Act on

sectorial, professional, corporate and other health insurance companies was implemented in 1992.

The specific amount of premiums is dealt with by Act No. 592/92 Coll., On premiums for general health insurance. The premium is 13.5% of the assessment base. The employer pays 9% and the employee 4.5% of the salary for health insurance. Since the First Republic's level of 6%, insurance has been increased more than twice, and the proportionality of the amount between the employee and the employer has not been maintained. The current system thus compared to the First Republic bonuses employees.

People without their own salary (children, retired people, on-duty soldiers, unemployed, etc.) have their healthcare insurance paid by the state. This is calculated as a percentage of the minimum wage and is significantly lower than the average insurance per employee. (Eim, 2006)

The actual process of providing medical care and payment for this treatment by the insurance companies is further discussed in chapter 2.7 Process of reporting and paying for healthcare.

2.5 Different providers of medical care

Institute of Health Information and Statistics of the Czech Republic is operating National Register of Health Service Providers. Every provider of any medical care has to be registered in this register in order to enter into contracts with health insurance companies.

According to data provided, National Register divides medical facilities into 48 different groups according to “type of facility” The list of all of these categories can be found in appendix no. 1.

The same source also differentiates between different forms of medical care. They divide medical care into 14 categories:

- acute inpatient care intensive
- acute inpatient care standard
- outpatient care
- long-term inpatient palliative care
- long-term intensive nursing care (DIOP)
- long - term care except intensive care

- day care
- follow-up bed intensive care
- subsequent inpatient medical rehabilitation care
- follow - up bed care - standard
- primary outpatient care
- specialized outpatient care
- stationary care
- health care provided in the patient's own social environment
 - dialysis
 - home care - medical rehabilitation
 - home care - nursing
 - home care - palliative
 - visiting service
 - artificial lung ventilation (2020)

2.6 Health insurance companies

After the revolution in 1989 the biggest insurance company (VZP) in the Czech Republic was founded by an Act in 1991 (as already mentioned in chapter 2.4.4). Based on the aforementioned Act from 1992, 26 further insurance companies were subsequently established, of which only six (other than VZP) are in operation today.

Each insurance company has a “network” of facilities, with which they have contracts. Based on these contracts health insurance companies reimburse the cost of provided healthcare. This means, that if the given facility does not have a contract with the given insurance company, it can treat the policyholder's policyholder, but the care must be paid for by the patient himself.

In Czech Republic there also exists the Association of Health Insurance Companies of the Czech Republic. It brings together all 6 employee health insurance companies (all but VZP) in the Czech Republic. This association defends common interests of health insurance companies and their clients in relation to state organizations, professional associations and health care providers with the main goal of improving the quality of services for its clients. (Szpcr.cz, 2020)

2.6.1 111 VZP

General Health Insurance company is, as already mentioned above, the oldest and biggest health insurance company in the Czech Republic. It has almost 6 million clients and these clients can choose from the widest network of health service providers, because more than 96% of general practitioners and more than 41,000 healthcare providers have a contract with VZP. 60% of treated patients in these healthcare facilities are insured by VZP. (VZP, 2019)

Due to the position on the market, which this insurance company has, any medical facility that is opening, tries to get a contract with VZP at the very beginning. If the facility gets the contract, it is easier to sign contracts with other health insurance companies.

2.6.2 201 VoZP

The Military Health Insurance Company (Vojenská zdravotní pojišťovna, VoZP, in Czech) is a departmental health insurance company operating within the Czech public health insurance system cooperating with the Ministry of Defense of the Czech Republic and the Army of the Czech Republic. Soldiers in basic service, active service and students of military schools who are preparing for the service of a professional soldier are compulsorily insured with VoZP. VoZP provides health care through top experts in military and civilian health facilities and spa houses. They take care of their insured through a contracted health network throughout the Czech Republic, which includes 25,000 healthcare providers. (Vojenská zdravotní pojišťovna ČR, 2019)

2.6.3 205 ČPZP

The Czech Industrial Health Insurance Company (Česká průmyslová zdravotní pojišťovna, ČPZP, in Czech) was established by a decision of the Ministry of Labor and Social Affairs of the Czech Republic. It was originally named Metallurgical Employee Insurance Company and over the years merged by decision of the Ministry of Labor and Social Affairs with several other insurance companies. Now, ČPZP is the second biggest employee health insurance company in the Czech Republic. (ČPZP.cz, 2019)

2.6.4 207 OZP

Departmental Health Insurance Company for the employees of banks, insurance companies and construction (Oborová zdravotní pojišťovna, OZP, in Czech) is the third largest employee insurance company in the Czech Republic. (OZP, 2020)

2.6.5 209 ZPŠ

Škoda Employee Insurance Company (Zaměstnanecká pojišťovna Škoda, ZPŠ, in Czech) was established on the basis of an application submitted by ŠKODA, automobile joint stock company (now ŠKODA AUTO, a.s.) Mladá Boleslav. In connection with changes in legislative conditions, ZPŠ gradually developed into a regional health insurance company with a stabilized clientele and a strong link to the founding company ŠKODA AUTO, a.s.

ZPŠ has gradually built up a sufficient and high-quality network of health service providers to ensure that health services are available to policyholders in all areas of expertise, including specialized facilities. (Zpskoda.cz, 2016)

2.6.6 211 ZPMV

The Health Insurance Company of the Ministry of the Interior of the Czech Republic (Zdravotní pojišťovna ministerstva vnitra, ZPMV, in Czech) was established (same as ČPZP) by a decision of the Ministry of Labor and Social Affairs of the Czech Republic. It is currently the second largest health insurance company in the Czech Republic. ZPMV has currently over 1,3 million clients, however, health insurance for employees of organizations under the Ministry of the Interior of the Czech Republic in this insurance company is not mandatory, and it provides its services to the general public. (Zpmvcr.cz, 2019)

2.6.7 213 RBP

The Fraternal Cash Register, healthcare insurance company (Revírní bratrská pokladna, RBP, in Czech) is the second smallest (after ZPŠ) by number of insured, but according to their website is the biggest regional employee health insurance company in the Czech Republic. They have a network of 12 000 medical facilities. (RBP, 2020)

2.7 Process of reporting and paying for healthcare

2.7.1 Methodology

“According to the valid wording of Act No. 551/1991 Coll. about General Health Insurance Company of the Czech Republic (VZP), VZP manages, updates and develops the information system. To accomplish this task, VZP issues a “Methodology for the Acquisition and Transfer of Documents” (hereinafter referred to as the “Methodology”) for contractual health service providers. Its wording, or necessary changes made especially in connection with the change of generally binding legal regulations, is prepared in cooperation and agreement with representatives of healthcare providers and representatives of health insurance companies.

The methodology regulates in detail the conditions and the manner of acquiring and handing over documents for the reimbursement of provided healthcare covered by public health insurance (hereinafter referred to as healthcare, respectively care) in accordance with the valid wording of generally binding legal regulations.” (VZP, 2016)

The whole process is then led according to this methodology, as well as methodology on data interface and codebooks. Based on these documents, the reimbursement is calculated. (VZP, 2016)

2.7.2 Procedures and documents

As the methodology states, everything a doctor does has to be reported to the insurance company in a form of a written report and a numeric code. The 5-digit code contains not only information about what was done, but also information about expertise of the doctor, what material or medication and its amount is needed for the procedure, how long the act should take and what level of education a doctor performing a given procedure must have. An example of such a code is shown below.

72115	EXAMINATION FOR THE APPLICATION OF THE HEADPHONE CONTROL							
	Examination of whether the set parameters match the daily use of the hearing aid, adjustment adjustments and tests necessary to verify the settings. Not to be combined with clinical examination.							
Category	OF	OM	Points	Holder	INDX	Time	ZUM	ZULP
fully covered	1/1 day 6/1 year	specialized workplace	132	L2	2	30	no	no

Table 1 Example of a procedure

Source: Seznam výkonů s bodovými hodnotami (2020)

From the table above we can see, that the expertise of this procedure is 702 phoniatics, this procedure can be executed once a day and 6 times a year. This procedure takes 30 minutes to execute and no material or medicaments are needed.

Once the patient is treated are these procedures compiled into documents. These documents can be either in paper form or electronic form. These documents are in most cases used for the reimbursement of provided care, but some of them can be used to request, design or prescribe further medical care, as mandatory reports or as a basis for inspection. There are currently 41 different types of documents – the list of them is connected to this DT as annex no.2. (VZP, 2016)

2.7.3 Types of healthcare reporting

The methodology of VZP differs between 3 types of healthcare reporting:

- Ambulant care of attending doctor
- Institutional care (care in hospitals, hospices, treatment institutes)
- Care requested, suggested or prescribed by attending doctor.

Ambulant care of attending doctor can be only reported on a patient, who is not hospitalized. The only exception is, when a dental care is provided while patient is hospitalized for a different expertise.

Institutional care is care provided in hospital and specialized medical institutions. Care provided at a department of a different expertise in the same institution has to be reported

in a separate document. Therefore, if a patient is treated at the same hospital, but at 3 different departments, the hospital will report care for the patient in 3 separate documents, but together as one case. The reported document has to include 3 information; nursing days, category of the patient, and other medical procedures.

Requested care by attending doctor is executed by expertise doctor and only necessary care to fulfill the request is executed and reported. (VZP, 2016)

2.7.4 Forwarding of document to health insurance company

All care provided in the given medical facility is summarized into documents and cases. All this information is (or should be) already uploaded into the IS by attending doctors. At the end of each month, all the documents are put together in the IS and into a batch for each insurance company. These batches are send to insurance companies, nowadays the whole process is done online by most facilities through a special portal.

Once the insurance company receives the batch, it controls each document, its number, if the codes of procedures are correct and if everything is combined correctly. The health insurance company then sends back a list of corrections, which needs to be done. These corrections are then resent by the end of the following month as a new corrective batch together with a regular batch from the current month.

2.7.5 Types of payments for medical care

There are two possible ways, how health insurance companies are sending money to the medical care providing facility. These payments are either way set by the contract the facility has with the given insurance company and by endorsement no. 2, which is always part of the contract. It is the administration of personnel, technical equipment and performances which are contracted and the facility can execute it on its patients.

Performance payment

Payment by performance is usually method used by small facilities or with insurance company, where reported care is generally on a smaller scale. The process is exactly as described above. Once the facility sends the batch to the insurance company and it will pay whatever amount of care was provided that month (after correction).

The amount is calculated according to the points reported. As can be seen in chapter 2.7.2, each procedure is worth certain amount of points. Amount of points is than

multiplied by point value (hodnota bodu, HB, in Czech). HB is either calculated by a formula or given precisely; this is always set by decree of the Ministry of Health, which is issued for each year. A number of factors are taken into account in the point value, such as the doctor's expertise, whether he has a lifelong learning diploma, etc. Therefore, this value can (and usually is) different not only for each facility, but also for each insurance company with which it has contracts.

The result of multiplying number of points with the point value shows, how much money the facility will receive for the given month.

Preliminary monthly payments

The second option are preliminary monthly payments (předběžné měsíční úhrady, PMÚ, in Czech). PMÚ is calculated sum of money set in the contract, which is paid to the facility every month no matter the amount of care it actually provided. At the end of the year a settlement is made, comparing the amount paid during the year and the amount that should have been paid. Based on this settlement either the facility or the health insurance company pays the surplus amount.

Based on the final settlement the amount of PMÚ is set for the upcoming year. The amount can be also adjusted during the year, for example if a facility grows and the amount of care increases rapidly.

2.8 Available IS for hospitals

The whole process, which is described above - from manually describing performed procedure, to compiling codes of performance into documents and sending the documents to the health insurance companies is done through information system. There are several companies, which are selling these information systems and there are also several different types, since different systems are designed for different types facilities. Ambulances, hospital, laboratories, and other medical facilities; each of these facilities will need a different information system.

Two main medical software companies providing IS on Czech market are CompuGroup Medical s.r.o. and STAPRO s.r.o.. While CGM focuses on ambulance information systems and offers 6 different IS with slightly different features. STAPRO is currently offering 6 products as well, but focuses on large facilities, such as big clinics and

hospitals, and also on specialized facilities such as laboratories. (Stapro.cz, 2020; Cgm.com, 2019)

As already indicated, a suitable IS and its proper setting is crucial for the performance of the facility. The IS should not only be able to collect data and send it to the healthcare insurance company at the end of a month, but it should also be able to connect to other systems of the facility (such as accounting, HR, cafeteria, laboratories etc) and connect into one IS for better control, quality, and utility.

3 Practical Part

3.1 Nemocnice Kadaň s.r.o.



Picture 1 Photo of Nemocnice Kadaň s.r.o.
Source: Ohře Media (2020)

The hospital is providing medical care to citizens living in the catchment area of Kadaň, Vejprty, Klášterec nad Ohří, Radonice, and partly of area of Žatec and Podbořany. There are 32 villages in Kadaň catchment area, 27 villages in Klášterec nad Ohří catchment area, 24 villages in Radonice catchment area, and 7 villages in Vejprty catchment area. (Nemocnice Kadaň, 2020) The sole owner of the hospital is the city of Kadaň.

Nemocnice Kadaň was first opened to the public in 1978 and was a very modern building built in the form of a monoblock for its time. After opening it was assisted by a number of doctors from the nearby Chomutov Hospital. Thanks to the opening of the hospital building, health care has significantly improved in Kadaň. In the monoblock were placed 17 main parts. Since its inception, the hospital has been a part of the District Institute of National Health until the early 1990s. (Aktuálně.cz, 2015)

The hospital provides inpatient care in the fields of internal medicine (including ICU), surgery (including ICU), orthopedics, gynecology and maternity hospital, pediatrics, urology, ARIM and currently has a capacity of 230 beds. All departments are above standard equipped with instrumentation and staffed for quality patient care. Over the past

few years, the hospital, with the help of sponsors, has built up superior rooms in each department, allowing the patients to choose a comfortable treatment similar to a hotel environment. (Nemocnice Kadaň, 2020)

Regarding the outpatient segment, the hospital in Kadaň offers care in specialized outpatient departments: internal (general internal, cardiology, diabetology), surgical, orthopedic and traumatology outpatient clinic (24-hour service), general practitioner, general practitioner, pediatric, urological and other. It also provides facilities for the operation of other professional private outpatient clinics, including the rehabilitation department and dental services. The pharmacy is also located in the health center. (Nemocnice Kadaň, 2020)

3.2 Presentation of quantitative data

There are 3 types of quantitative financial data, that were collected. As stated in the methodology, data was collected from 2010 to 2019 to get a 10-year period comparison

First, there is the financial data. The hospital uploads their annual financial report together with balance sheet, cash flow statement, and profit and loss statement onto their websites. These reports can be also easily found on public register and collection of documents.

Second, there is data regarding money that has been paid out to the hospital by each health insurance company. As payments from insurance companies represent the biggest part of income for the hospital, it is important to evaluate the development of these payments.

Third, qualitative data about the amount of executed medical care are presented. The amount of healthcare is determining for each medical facility.

3.2.1 Financial data

Secondary financial data that is used in this chapter were collected from annual reports, which are publicly available online. Turnover, profit after tax, total liabilities, total assets, and shareholders' equity were selected as financial variables. This data shows only the financial performance without any additional information. The selected variables are used to determine a financial situation of any company across sectors; therefore, it might not be precisely determining the performance of a medical facility. That is the reason, why other data are used as well.

All amounts are in “000 CZK”.

	2010	2011	2012	2013	2014
Sales	207 879	201 320	208 462	184 222	204 626
PAT	3 022	1 866	-594	-17 300	5 694
TL	20 223	37 026	39 243	47 545	58 192
TA	512 340	515 414	517 871	509 059	512 155
SE	492 117	478 388	478 628	461 514	453 963

	2015	2016	2017	2018	2019*
Sales	206 750	214 129	245 099	286 499	302 977
PAT	1 536	754	3 124	2 246	1 166
TL	67 190	72 992	70 052	67 406	
TA	522 464	528 757	528 919	528 526	
SE	455 274	455 765	458 867	461 120	

Table 2 Selected financial indicators 2010-2019
Source: Financial reports of Nemocnice Kadaň s.r.o.

PAT...profit after tax

TL..... total liability

TA.... total assets

SE.... shareholders' equity

*..... financial report of 2019 was not officially published before the deadline of submitting this thesis, therefore only partial data were collected

Data shown in Table 2 are taken solely from the financial reports (profit and loss statements and balance sheets). The annual reports also provide table with financial data regarding costs and revenues, investments and average wage. As these indicators can show a little more about the performance of the hospital I have decided to include the data as well. The table is inserted in this thesis as Table 3.

All amounts are in “000 CZK”, except average wage.

	2010	2011	2012	2013	2014
Total cost	210 713	215 192	216 511	207 602	207 893
oow personnel	131 378	138 966	139 703	132 602	132 538
Total revenue	213 735	217 058	215 962	190 302	213 587
oow operating grants	11 621	8 325	7 130	7 130	8 317
Total investments	4 204	9 000	4 512	4 773	7 262
Average wage	22 303 CZK	23 832 CZK	23 267 CZK	23 136 CZK	23 826 CZK

	2015	2016	2017	2018	2019
Total cost	211 932	220 856	261 786	307 239	316 551
oow personnel	136 015	142 962	181 324	217 432	221 586
Total revenue	213 468	221 610	264 910	309 485	329 323
oow operating grants	6 268	6 113	19 438	22 359	13 100
Total investments	9 216	5 130	10 539	9 388	9 604
Average wage	24 898 CZK	26 848 CZK	33 521 CZK	38 686 CZK	39 978 CZK

Table 3 Given financial indicators 2010-2019
Source: Financial reports of Nemocnice Kadaň s.r.o.

Oow.....out of which

Total cost

According to Business Jargons (2016), total cost is the actual cost incurred in the production of a given level of output. Total cost is the sum of fixed cost and variable cost. In other words, these numbers represent all that the hospital spends in order to provide their services and sell goods in a given period. The numbers sum up:

- personnel cost; including wages, social and health insurance costs (currently around 70% of total cost),
- operating cost; including building maintenance, water, gas and electricity supply, ordered controls of all medical equipment, etc.,
- investments, but only in the amount of depreciation.

Total revenue

Major parts of revenues come from health insurance companies, as they are the hospital’s main source of income. Other sources of revenue are selling of goods (for

example blood) or rent money from leasing ambulance space. Grants provided by external investors with a predetermined purpose for operation of the hospital are summed up as operating grants.

Total investments

Investments are counted as any expenditures above 40 000 CZK made in the given year. The included amount is only up to the depreciation amount in the given year. For example, if a new CT machine was purchased for 10m CZK and will be depreciated for 5 years, approximately 2m will be added to this amount each year.

There are several resources of the investments; own resources (mainly money from health insurance companies, resources from previous years...), bank loans, or investment of the owner.

Average wage

This number shows average gross wage of all employees of the hospital, including medical and non-medical staff. The average gross wage includes overtimes and bonuses.

Financial analysis of data from chapter 3.2.1 is included in chapter 3.3 Financial and economic analysis.

3.2.2 Income from health insurance companies

The second type of financial data was not taken directly from publicly available reports, but from an internal table done by the hospital management. That is why the data is not available from year 2010 as previous data, but only from period 2014 – 2020.

The Table 4 shows how much money was paid to the hospital for provided healthcare. There is calculated remuneration, together with surcharge (when the hospital is entitled to get more money, than was paid out) or overpayment (hospital has to return money it is not entitled to) per each year and for each insurance company.

Years 2019 and 2020 are included in the table, although without surcharge or overpayment, because the financial settlement for 2019 is not known yet.

As 2 insurance companies are paying for provided healthcare in a form of performance payment, there is no surcharge or overpayment. Most insurance companies are paying in a form of preliminary monthly payments; therefore, a surcharge or

overpayment occurs when the paid out money are compared to the amount which should be paid out according to the actual medical care provided at the end of each year.

All amounts are in CZK.

	2014		2015		2016		2017	
	calculated remuneration	surcharge (+) overpayment (-)	calculated remuneration	surcharge (+) overpayment (-)	calculated remuneration	surcharge (+) overpayment (-)	calculated remuneration	surcharge (+) overpayment (-)
111	136 965 286	-5 320 598	142 996 359	-6 120 393	143 890 385	-9 699 871	155 854 876	-297 152
111 correction					144 431 346	540 961	156 629 543	774 667
201	7 192 159	2 944 661	6 950 130	2 562 078	6 977 006	2 457 314	5 394 398	-2 195 284
205	15 257 267	226 219	15 641 053	309 226	15 799 400	-435 198	17 270 850	124 656
207	2 790 000	39 896	3 059 849	21 463	2 995 868	-222 834	3 682 649	-81 333
209	13 545		21 670		12 809		2 838	0
211	9 848 557	1 688 557	9 577 729	-22 271	9 354 621	-1 370 019	11 422 937	963 737
213	154 763		67 809		66 496		169 675	0
total hospital	172 221 576	-421 265	178 314 598	-3 249 897	179 637 546	970 224	194 572 890	-710 709
LDN	13 578 671	68 416	13 363 735	-788	13 909 597	30 149	16 867 199	
transport	1 243 498	259 172	1 358 776	290 114	1 790 946	541 751	1 278 579	
capital payment								
social beds								
TOTAL	187 043 745	-93 677	193 037 109	-2 960 571	195 338 089	1 542 125	212 718 668	-710 709

	2018		2019		2020	
	calculated remuneration	surcharge (+) overpayment (-)	calculated remuneration	surcharge (+) overpayment (-)	calculated remuneration	surcharge (+) overpayment (-)
111	173 301 784	6 420 370	202 590 561		223 421 268	
111 correction						
201	8 904 273	915 669	7 484 856		10 799 077	
205	18 076 425	337 512	20 510 520		21 704 726	
207	4 442 546	22 810	4 329 084		5 686 175	
209	7 381	0	0		0	
211	13 269 057	2 165 457	15 216 000		16 636 161	
213	169 381	0	0		0	
total hospital	218 170 846	9 861 817	250 131 021		278 247 407	
LDN	15 343 752		15 421 288		17 271 000	
transport	1 342 662		1 333 091		1 493 061	
capital payment	2 260 432		2 793 277		2 793 277	
social beds			1 803 927		1 803 926	
TOTAL	237 117 692		271 482 604		301 608 671,00	

Table 4 Income from insurance companies 2014-2019
Source: Nemocnice Kadaň s.r.o.

The table shows total amount per hospital, but also money received by hospice, transportation, capital payment for practitioners (since 2018) and money for social beds (from 2019). The total amount for the medical facility is summed up as “TOTAL”

The general aim for the good of the hospital is clear – to keep increasing the income from insurance companies by increasing the amount of provided care and to avoid any overpayment, so the hospital doesn't have to return any money.

Data evaluation

The total amount of money the hospital received in 2014-2016 didn't change significantly. It was increasing, but only slowly – by 4% from 2014 to 2016. The increase from 2017 was however significantly higher. The increase in the next 3 years from 2017 to 2019 was by 28%. This shows, that the increase from 2016 (when the director changed) to 2020 (numbers are not definite, but will not change significantly) is huge – 54% increase of income from insurance companies for provided care.

In the current system, it is possible to contradict the annual billing up to 3 years in the past. This was done retroactively for years 2016 and 2017 with VZP healthcare insurance company– these years have 2 rows in the table. According to the original annual billing the hospital should've returned almost 10mil CZK back. Due to some changes in the system and correction of errors, the insurance company did not require to return the 10mil CZK, and send more than 500 000 CZK to the hospital on top of that. Similar situation occurred in 2017. As can be seen, the hospital was giving back money to VZP until 2016, but after these changes in the system of reporting care and correction of preliminary monthly payments, the hospital started receiving money after annual billing.

3.2.3 Medical indicators

Nemocnice Kadaň s.r.o. is a business, but primarily it is a hospital, whose main goal is to heal and help people with their medical problems. This is why I consider very important to include quantitative data showing the volume or executed medical care. Table 5 is showing 3 indicators of this volume:

- number of outpatient examinations (OE),
- number of hospitalized patients (HP),
- number of operations (O).

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
OE	182 537	184 099	186 095	193 103	171 154	104 914	89 422	60 237	87 661	92 050
HP	9 026	8 970	9 070	8 933	9 299	8 994	8 761	8 915	9 960	10 152
O	2 135	2 589	2 536	2 304	1 947	1 920	1 811	1 818	1 903	2 085

Table 5 Medical indicators 2010 – 2019

Source: Financial reports of Nemocnice Kadaň s.r.o

If we take in consideration everything that has been already discussed, we can state the obvious aim – to be able to treat as many patients as possible and maximize the volume of provided care with current resources in order to receive more money from the insurance companies. When looking at the given data, we can see that the hospital was at its peak performance in 2013 and then it slowly started to fall. And it did start to fall rapidly. As the trend was very radical, it was hard to turn around, so we can see, that the decline continued also into year 2017, before it started to turn again.

It is interesting to compare Table 5 with Table 4, which shows income from insurance companies. As stated in the previous chapter the income from insurance companies was between 2014 and 2016 slightly increasing (by 4%), but the volume of executed care decreased in the same time frame by 48%. At first glance it may seem that there is none or very low correlation between these two variable, despite the logic that the more executed care, the more money will the hospital get.

But what happened here is, that the hospital was not communicating with the insurance companies properly and was not adjusting their preliminary monthly payments. This resulted getting the same money for several years, without meeting the goals. The hospital was then asked to give the money back after the annual billing, but the hospital only dragged their (annually increasing) debt into next years and getting into worse financial position each year.

3.3 Financial analysis

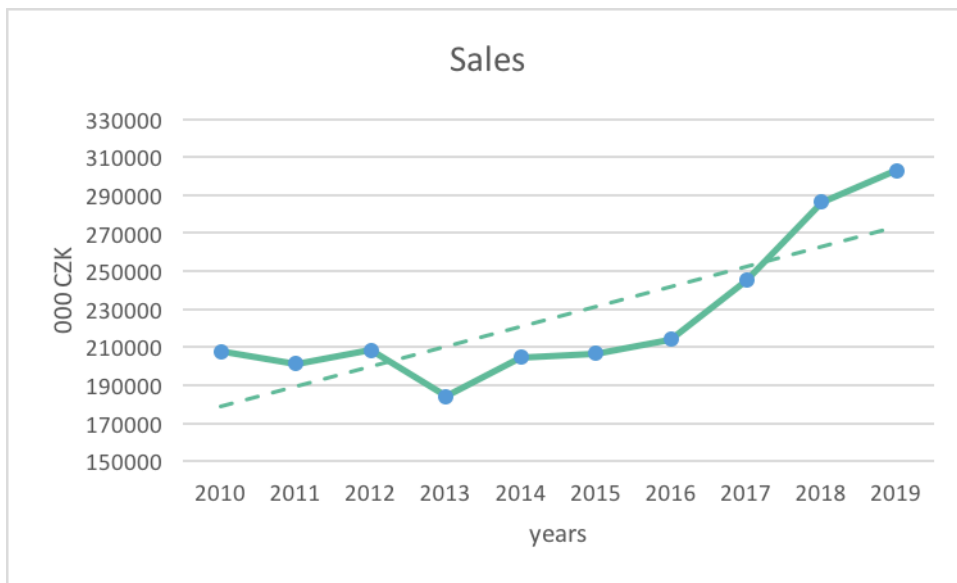
The tables in chapter 3.2.1 shows selected financial data in a 10-year period. Below are performed financial analyses using the collected data.

3.3.1 Horizontal analysis

Horizontal analysis shows data from 10 consecutive years and shows the trend of the values. The numerical values are already put together into a table in chapter 3.2.1. To show the actual trend, values from Figure 2 are shown graphically in a charts below.

The graphs include not only the values of each variable, but also a linear trend function for each variable. The trend function shows not only what the trend has been, but also indicates how the values will statistically develop in the future.

Sales

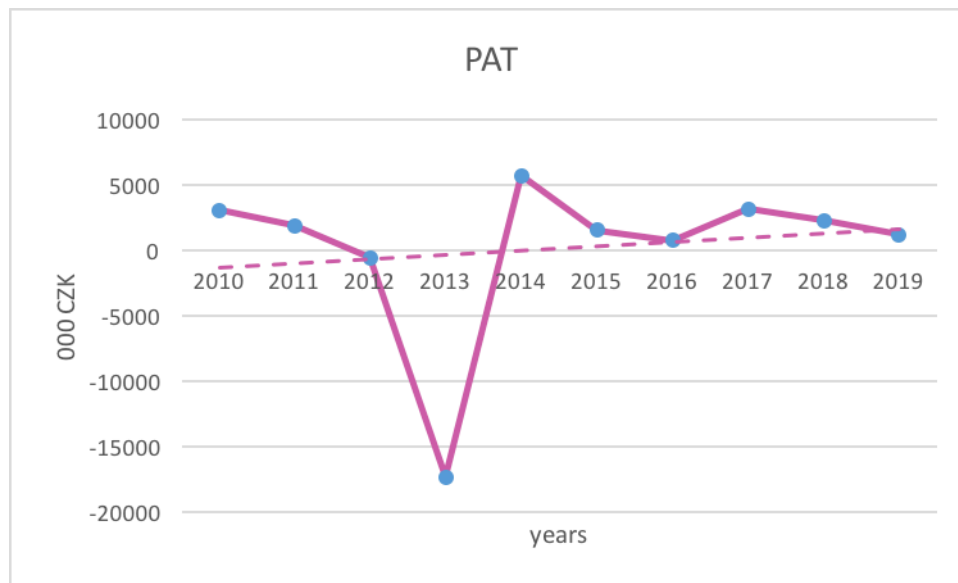


Graph 1 Graphic display of sales

Source: Financial reports of Nemocnice Kadaň s.r.o

Graph 1 shows how sales developed in the past decade. There is a clear breaking point of the trend in 2016. Until then, sales were more or less the same with an average of 203.9m CZK, however is increasing since then pretty clearly. As sales are increasing, the business is receiving more money, which can be then invested back into the business.

Profit after tax (PAT)

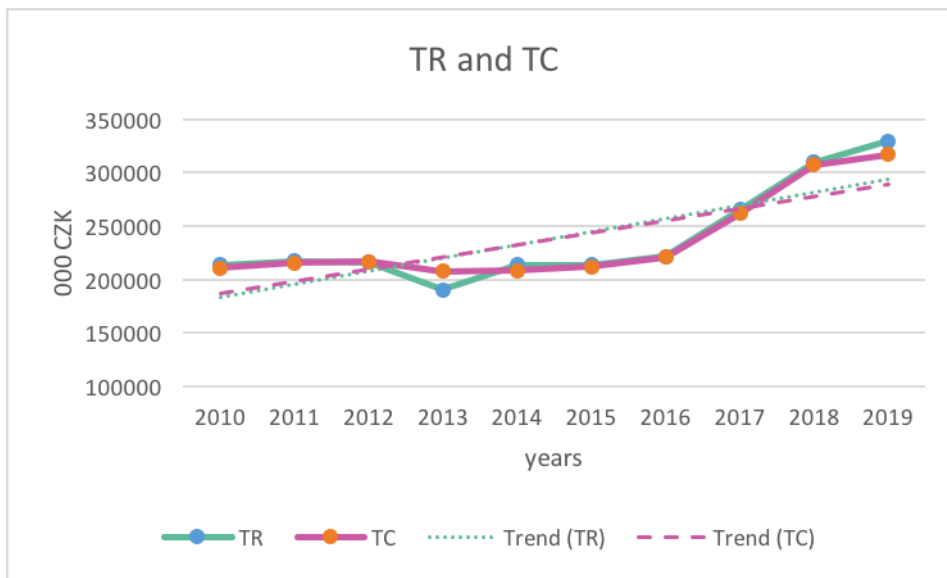


Graph 2 Graphic display of PAT

Source: Financial reports of Nemocnice Kadaň s.r.o

When looking at the horizontal analysis of profit after tax, one year catches the eye as a clear outlier. In 2013 PAT drastically dropped to a loss of more than 17 million CZK. After this year the company remained in profit, which had only a slowly rising tendency according to the trend line.

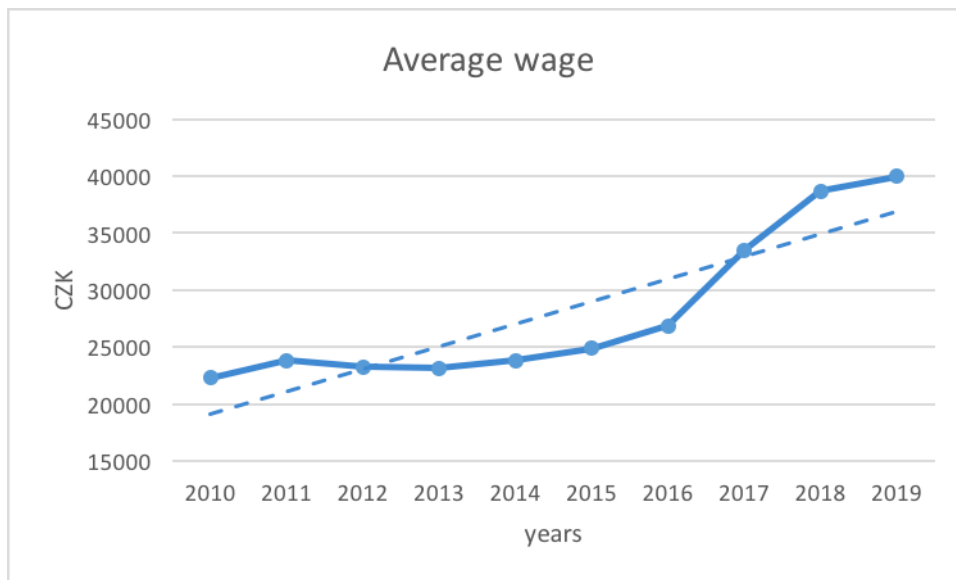
Total cost (TC) and total revenue (TR)



Graph 3 Graphic display of TR and TC

Source: Financial reports of Nemocnice Kadaň s.r.o

Average wage



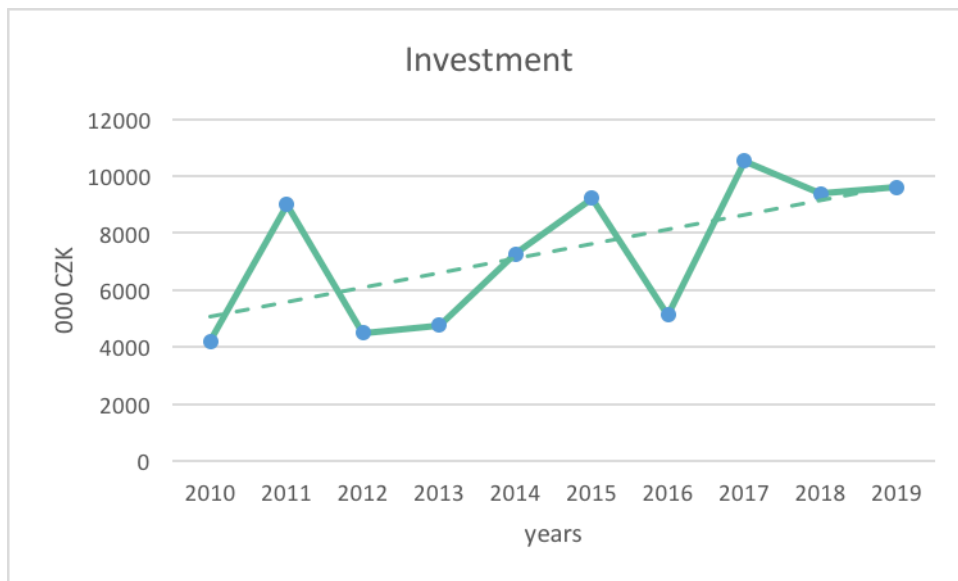
Graph 4 Graphic display of average wage

Source: Financial reports of Nemocnice Kadaň s.r.o

Graph 3 is showing the development of total cost and total revenue. Naturally, the hospital should aim for TR being higher than TC to make profit. The breakeven point occurred between 2011 and 2012, and again between 2013 and 2014. This explains why

the hospital was in loss in 2012 and 2013. Since year 2016, TR and TC rapidly increased – by 49%. Total revenue increases, by so does the total cost. This can be explained by Graph 4 below. As approximately 70% of TC is personnel cost, it is clear, that the average wage is highly correlated to TC, therefore the graphs have very similar similar curves. The trend lines of Graphs 3 and 4 are also similar.

Investments



Graph 5 Graphic display of investments

Source: Financial reports of Nemocnice Kadaň s.r.o

The graph of investments is clearly showing a positive trend line, however the increase of investments in the past decade is not continuous as there are many up and downs in the data. However, the positive trend is showing, that the management is investing more money into the development and improvement of the hospital.

3.3.2 Leverage analysis

As part of the leverage analysis the debt to equity ratio (D/E) was concluded. The ratio is a financial, liquidity ratio that compares a company’s total debt to total equity. The debt to equity ratio shows the percentage of company financing that comes from creditors and investors. A higher debt to equity ratio indicates that more creditor financing (bank loans) is used than investor financing (shareholders). (My Accounting Course, 2020) The ratio is calculated as follows:

Debt to Equity ratio = total liabilities / total shareholders' equity

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
D/E	0,04	0,07	0,08	0,10	0,12	0,14	0,16	0,15	0,14	

Table 6 Debt to equity ratio 2010-2019

Source: Nemocnice Kadaň s.r.o., own calculation

From the information given above, it is clear, that the smaller the ratio, the better, because more financing is coming from investors than from banks. The D/E ratio in the past 10 years of Nemocnice Kadaň are in general quite low, although there was a continuous increase from 2010 to 2016. After that, the increase stopped, and ratio is slowly decreasing again. Ratio for 2019 is not available, because financial data were not available before the submission of the thesis.

3.3.3 Profitability Analysis

Net profit analysis was conducted, as its part of profitability analysis. “Net Profit Margin (also known as “Profit Margin” or “Net Profit Margin Ratio”) is a financial ratio used to calculate the percentage of profit a company produces from its total revenue. It measures the amount of net profit a company obtains per dollar of revenue gained.” (Corporate Finance Institute, 2020) The formula for net profit margin is:

Net Profit Margin ratio = net profit / revenues

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
NPM	1,41%	0,86%	(0,28%)	(9,09%)	2,67%	0,72%	0,34%	1,18%	0,73%	0,35%

Table 7 Net profit margin 2010-2019

Source: Nemocnice Kadaň s.r.o., own calculation

The desired profit margin percentage differs by industries and also by the size of the company. Looking at the data in the table, it is clear that years 2013 and 2014 will have negative NPM, since the hospital reported loss at the end of the year. Other than that, there is no significant trend in the data.

As this ratio is telling us, what percentage of revenues is turned into profit, it is clear, that the hospital is not generation as much profit as it could. On the other hand, the hospital is now focusing on growth and not on cutting expenses in order to increase profit. As already stated, most of the expenses are personnel expenses, which are hard to cut, when the hospital is in a growth and is aiming for new employees and maintaining the ones it already has.

3.3.4 Liquidity analysis

Liquidity analysis in general is used to show company's ability to meet short-term obligations, while short-term obligations are considered those due in less than one year. The liquidity analysis can be conducted by current ratio. It indicates the financial health of a company and how it can maximize the liquidity of its current assets to settle debt and payables. Current ratio is calculated as:

$$\text{Current ratio} = \text{current assets} / \text{current liabilities}$$

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CR	3,32	3,56	4,05	2,95	2,84	4,45	3,11	3,57	3,66	

Table 8 Current ratio 2010 – 2019
Source: Nemocnice Kadaň, own calculation

The current ratio did not change much in the past decade. The average value is 3,50 and the values are stable. This assertion is based on the fact, that slope of the trend line is almost zero – 0,02.

As Corporate Finance Institute claims, “rate of more than 1 suggests financial well-being for the company” (2020). From this we can conclude, that the hospital is able to meets its short-term obligations quite easily on stable basis.

Ratio for 2019 is not available, because financial data was not available before the submission of the thesis.

3.4 Presentation of qualitative data

Qualitative data were collected in a form of an interview. Due to the pandemic of COVID-19 that broke out during creation of this thesis, the interview was, for safety reasons, conducted electronically – questions were sent by email and written answers were received back. The questions and answers were written in Czech and then translated into English.

The questions were answered by the hospital director – MUDr. Bc. Petr Hossner, MBA, who has been the hospital director since November 2016.

Question 1 You became the director on 11.11. 2016, why was there a change of management in the first place?

At that time, the director had been attenuating the company for the past couple of years and wanted to sell it. The owner – the city of Kadaň wanted to keep the company and continue to run the hospital.

Question 2 What were the first managerial changes you made as a director?

I set the structure and the rules in the hospital as in any other regular business or enterprise. Especially management and clear indicators of the performance of the company.

Question 3 What were the biggest managerial changes you made as a director?

The overall approach to the operation of the hospital. I told all employees, that we are a company that has to take care of itself and although we are a medical facility, no one will help us.

Question 4 What are your long term aims as a director?

Business development, annual increase of company's revenue/turnover, annually broadening of the spectrum of provided medical care.

Question 5 Do you consider important to try benefit all stakeholders? Why?

No. The most important is the interest of the company, which results in satisfying patients (increase in numbers), employees (increase of wages), and the owner (development of the company).

Is it even possible?

Yes, see results of the last 3 years.

How is that manageable?

To manage the company as it was yours.

Question 6 Can you name the best management decision you made as a director of the hospital?

The best was probably at the beginning, when I decided to take action right away. I didn't wait for any analysis or took time to settle down. I stated acting and initiated changes straight away.

Question 7 Can you name the worst management decision you made as a director of the hospital?

I don't know about any negative yet, but this will show in a longer time frame. There definitely are some.

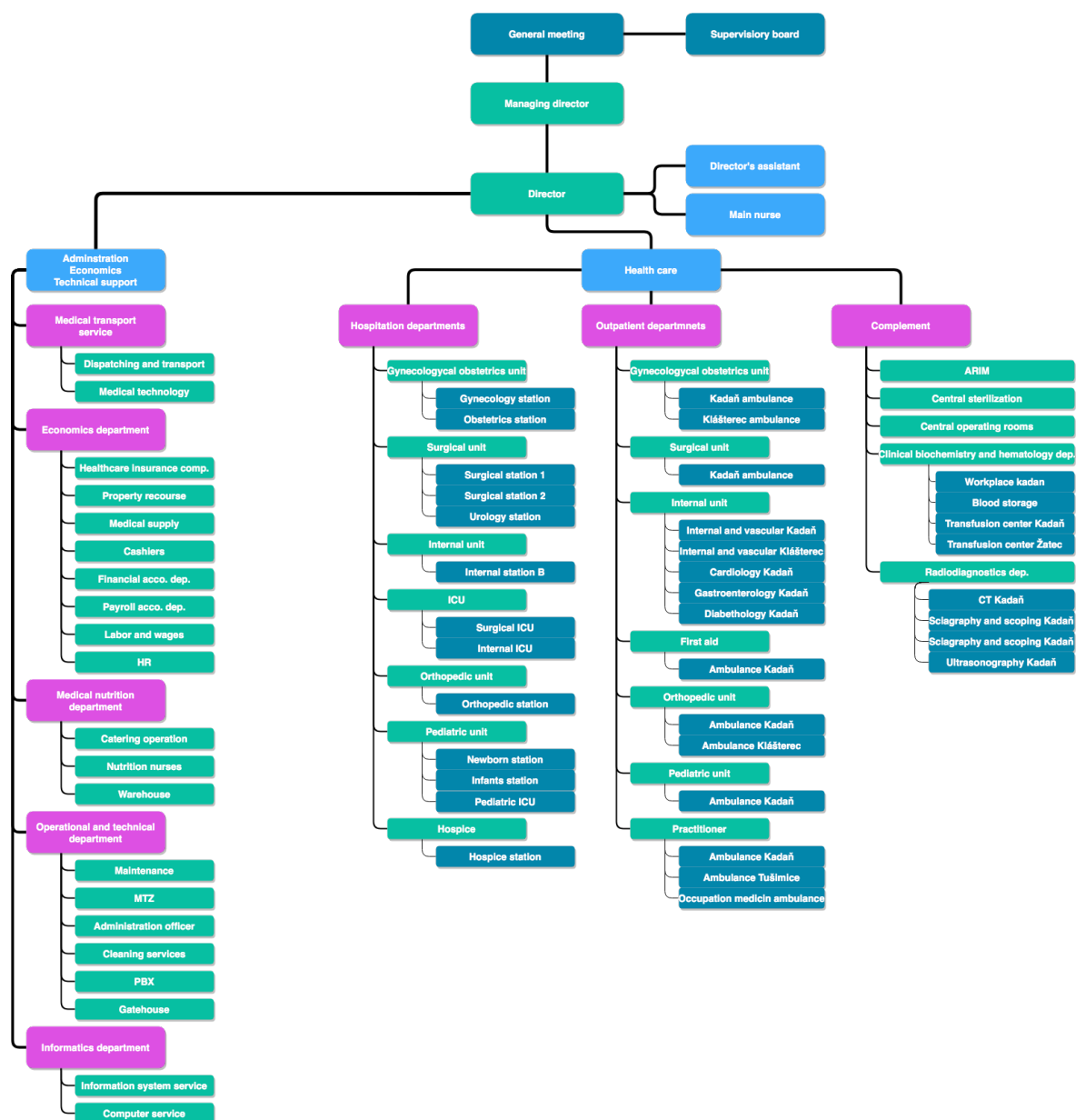
Question 8 What do you expect to be the biggest consequences of coronavirus pandemic for Nemocnice Kadaň?

During past few weeks we managed to reorganize the structure of the hospital, which was planned for the upcoming years. These changes will stay after the pandemic. At the same time this time will show, which employees are resilient in the next period of possible rapid development of the company.

3.5 Personnel of the hospital

3.5.1 Structure

According to the answers in the previous chapter, the organizational structure was the first thing, which was changed by the new director. Until then, each medical unit was taking care of HR, finance and reporting to health insurance companies. The main change was to let medical units do the medical work and responsibility for operation processes was shifted to corresponding departments.



Scheme 1 Organizational structure of Nemocnice Kadaň
 Source: Annual report of Nemocnice Kadaň

Currently, position of managing director and director is represented by one person. Then the structure divides into 2 main sections – medical part and non-medical part, which is providing supporting function. Main nurse and director’s assistant are directly under the director as well.

Non-medical branch is divided into 5 departments and each of them is contributing to a smooth running of the hospital

Medical branch is divided into hospital department, outpatient department and complement. Then, each department is divided into units based on the medical expertise.

3.5.2 Recruitment

Recruiting new employees should be one of the priorities of the hospital at this moment. As the hospital is aiming for an expansion of provided care and wants to increase the volume of executed medical care. But hiring is not as easy as it could seem in these days in the medical field.

Graduates

The problem is not in the educational system. Czech Republic has currently 8 faculties offering medical studies, which is a sufficient capacity and the interest of these studies is high - among Czech students as well as foreign students, who are trying to get into medical studies in Czech. Most of the foreign students come from Slovakia, USA, Canada, Great Britain, Norway and other. (Mluvte česky, 2014) The problem is in what happens at the end of the studies. General medical studies last 6 years and are followed by a 3-7 years of an attestation period, depending on the selected field. During this period the new doctor with less experience is not legally allowed to work independently most of the time. During this attestation period the young doctor is suppose to collect experience, but is usually receiving lower wage. This is causing young doctors to study in the Czech Republic, where the studies are free, but then leaving immediately after graduation to foreign countries, where the wages are higher, even in the attestation period. But this problem should be solved by the government of the Czech Republic, as it burdens the country as a whole. The country provides students with free study, but instead of staying here, the workforce leaves elsewhere.

The only thing the hospitals can do is to motivate doctors to stay in the Czech Republic. For hospital such as the one in Kadaň, is it also important to find a way how to attract young doctors who spend study years in the capital to small town like Kadaň and prove to them, that this is the place they want to work and live in.

Competitors

But this hospital is not the only one, which is trying to lure and attract new doctors and nurses. Hospitals in the whole Czech Republic are looking for new ways how to persuade doctors to come work for them. Hospitals are offering bonuses for new employees and are increasing the wages. Due to this, some nurses or doctors in the region are changing their employer quite often, as they are drowned by different, better offers.

Foreign doctors

Given the situation described above, Nemocnice Kadaň did find a solution and started hiring doctors of other nationalities, mainly from Ukraine and Palestine. These doctors have to first pass Czech language exams and have a recognized diploma by one of the Czech universities. As convenient as this approach might seem, it also has some pitfalls. The biggest one is approach by some of the patients.

From my personal experience while working at the hospital, complains about foreign doctors were one of the most repeated comments from patients. Majority of the complains go towards the language abilities of the doctors. On the other hand, there are some patients, who are appreciating, that there are doctors at all, who are able to provide needed medical care in the town, no matter the nationality.

3.6 Contracts with insurance companies

Provided care is paid for by the insurance company based on a legal agreement. That consists of a framework contract and endorsement n. 2. The endorsement is mandatory part of the contract and contains very important information for the whole payment reporting process.

Endorsement n. 2 contains:

- list of medical staff working for the facility,
- list of contracted performances,
- list of devices and machinery.

It is very simple – if a performance is not in the endorsement n. 2, doctor can't execute this procedure on a patient. In case he does, the hospital will not get any money for it. The goal is to correct all endorsements n. 2 to include the biggest spectrum of performances as possible. Everything, what is done on a patient, can be described by several codes of performances. If the spectrum is wide, the doctor can use more codes to describe one thing, therefore get more money for the same amount of executed care.

There are of course some rules. As explained in chapter 2.7.2, each performance is strictly connected to a certain level of education of the doctor, to certain equipment and/or requires a specific medial material or medications. In case the performance is reported with a mistake (without material, with a wrong equipment, or by a wrong doctor), the insurance company will not pay for the procedure and it needs to be corrected the following month.

As the hospital is hiring new employees, buying new machinery and extends the provided care, these endorsements must be updated very often. It is a demanding and lengthy process, but at the end of the day, this is what is bringing the hospital more money.

3.7 Information systems

3.7.1 IS used in Nemocnice Kadaň

From what was stated in the theoretical part, it is known, that the information system is playing an important role in running the hospital. There are currently 6 different systems that Nemocnice Kadaň is using. Until 2016 the systems were run separately and each of the systems had to be accessed separately to look at the data.

MIS

Medical information system (MIS) is one of the core IS the hospital is using. It contains and connects data about:

- diagnosis, number of patients, used medical supplies and medicines,
- decrees of Ministry of Health,
- prescription (recipes, vouchers, requisitions),
- controlling data regarding payments amendments,
- logistics of warehouses in individual departments.

HELIOS

Helios system contains most categories of information. It is however concentrated on a general business data, rather than medical ones. Some of the data Helios is gathering are:

- accounting information, cash register,
- bank and invoicing,
- warehouse and circulation of goods,
- mail records,
- register of contracts,
- maintenance and revision, etc.

Helios is directly connected to other 4 information systems listed below.

AKORD

Akord is a system which contains information about provided medical care. More specifically about hospitalizations, patients, executed medical care in the ambulances, and data about insurance companies, batches and documents created.

VEMA

Vema is a HR system, which is gathering data regarding salaries and human resources. This IS is one of the small ones, that the hospital is using, yet it is a key one in running the business.

FARMIS

Farmis is a small IS as well. It focuses on mass produced medicinal products and individually produced medicinal products.

AMADEUS

Amadeus, similar to Vema and Farmis, is small information system, which gathers information regarding blood – production, distribution, purchase, etc. Blood is one of the few products of the hospital, thanks to the transfusion center which was established in 2004. The collected blood is used not only for the patients of Nemocnice Kadaň, but is distributed and sold into other facilities.

3.7.2 Connection of IS

Until 2016 all of the systems in the hospital were running separately and were not connected. This meant, that if someone wanted to access data, he or she would have to open separately each system in order to find different information.

One of the changes that new management implemented was connection these systems and several of these systems are already connected. It is clearly more useful not only when looking for information, but also when inserting information into the systems. Automatic connection of the information systems is also speeding up the internal processes and optimizing them to avoid unnecessary errors in the transmission of information.

3.8 Final recommendations

Given all theoretical and practical information collected and described above, the hospital is now in a stage of an expansion and is growing as much as possible. This expansion is clearly caused by changes of director and the whole management. It is time, after more than 3 years, to catch the momentum and drive the business further. In order to do so, changes and adjustments should be made. As the main purpose of this diploma thesis is to optimize the management, here are the possible adjustments, which will be presented to the hospital director

Organizational structure of company management

As mentioned by the director, the hospital already changed the organizational structure and adjusted the system of superiors. It is also important not to only set these rules, but to control them as well. It is important to find a criteria and goals, that wants to be met and to keep controlling whether the goals were met or not.

Recruitment

Regarding the employees, there is willingness to employ new doctors and nurses into the hospital. However, as indicated in chapter 3.5.2, it is not that easy, as there is not enough potential workers at the market. The hospital is trying to offer income raise or sign-up bonuses. But in my opinion, it is important to think outside the box and offer something extra in order to arouse the interest.

Money can motivate one only so much, and it might not be the biggest motivator for everyone. But what everyone needs is housing. It could be promising to offer some of the doctors to live in town-owned flats. Even better, if the hospital would buy some building plots in Kadaň or in the nearby, it could sell these properties to new doctors with favourable interest rates. This could especially attract young medicine graduates, who are looking for a housing and are planning on starting family in the near future. The contract could be also conditional on signing a long-term employment contract with the hospital.

Connection of information systems

Connection of information systems is already described in the previous chapter. The hospital already did a lot of work on connection of the systems and its optimization.

Some of the information systems in the hospital are still running separately, for example IS for catering facilitates and transportation.

Cyber security

When talking about information system and connection of all systems into one connected network, it need to be kept in mind, that the more the systems are the more they are attackable. In the past few months 3 Czech hospitals were under cyber attack, that put them out of service for weeks and cost them millions of Czech crowns. It is necessary to keep this in mind and regularly update antivirus programs and implemented firewall.

Hardware equipment

With the improvement of the software, it is natural that hardware needs to follow and be upgraded as well. The hospital already upgraded all the servers and doubled the number of computers at the surgeries. Higher number of computers is making work for doctors easier, as they can submit all their work and executed performances into the information system right away, without having to share it with a colleague or two.

Other than computers, it is important to also invest in new medical equipment and instrumentation. New machines are able to work faster and more more efficiently and more accurately. Secondary effect of having the newest equipment and machinery is in recruitment. If the hospital is well equipped new doctors will be more interested in coming and working with the most modern “toys” the hospital can provide them.

The overall improvement of hardware capability of the whole facility will in the long run contribute to the main goal – increasing reported care to the insurance company. Newer equipment is (as mentioned) is able to perform tasks faster, therefore there is capacity for more performances. The new equipment is also able to send all the information directly into the information system, therefore limiting the possibility of doctors forgetting to report any performance they executed.

Extension of provided care

A lot of these changes are going hand in hand with each other. With more doctors coming into the hospital a lot of new opportunities open. As the hospital is expanding by number of employees and patients, it should also be expanding by medical expertise. expanding the range of expertise and services offered will bring more potential

customers/patients and incoming doctors will appreciate that they can do any expertise they are interested in.

Surroundings

The look of the environment, of the building and of the interiors is not something, that is directly connected to the medical performance, which is the main activity of the hospital, but it may be just as important as the medical performance. The look of the building, the corridors, the waiting rooms, ambulances, rooms for hospitalized people etc, that is what will patients will remember when looking back at their stay or visit of the hospital. Patients are mostly coming to the hospital in times of emergency looking for help and they need to feel nice and safe in the hospital. If they do so, they will more likely recommend this hospital to their family and friends and will most likely come back again, when they need it. And that is exactly what the hospital wants.

It was already said, that the hospital was build in the 70s and unfortunately not much has been renovated. In the past few years the hospital did finally asked for and got some money, which they were able to invest in the renovations, but there is still a lot to do. The whole entry with main hall at the health centre was renovated, there is currently running the reconstruction of the puerperium department, and the hospital collected money for renovation of the central operating rooms. However, that's not the obvious thing, which everyone will notice at the first sight. The corridors that pass hundreds of people a day could be painted in a fresher and more modern colour. This change would have minimal costs and would be very effective since it would be noticed by every visitor.

And once again, patients are not the only ones who will appreciate nice environment. Not only that doctors would like to have the newest equipment possible and be able to work in the field they wanted to, but they will definitely appreciate a nice working environment as well.

On the other hand, the hospital is currently not spending much on the aesthetics, but is putting money into non-visible, but very functional projects. It has renovated the transformer station, the roof is being renovated etc. As there haven't been many renovations since the opening, these upgrades are much needed and critical for the running of the hospital.

Satisfaction questionnaires

Every hospitalized patient is supposed to get an anonymous questionnaire asking about the experience they had at the hospital. The questionnaire hasn't been changed for more than 7 years and is not efficient. There are 19 questions, which are poorly asked, and only 5 questions are adequately evaluated. The evaluations are then used by the main nurse to compare the performance of each unit.

These questionnaires are the easier way how to get a feedback from the patients right away and this tool is not efficiently used. Majority of the questions should be answered in a different way, should not be answered or different questions should be asked. Also, the evaluations should be done more efficiently and results should be taken more seriously. There are many useful points in the comment are at the end of these forms, unfortunately these are not taken into account.

As someone who has been processing these questionnaires for evaluation for almost two years now, I know with certainty, that some comments are repeating again and again and has not been taken in account. This should change.

Reporting care

Chapter 3.6 describes in detail how the contracts with insurance companies are structured and what all is contracted. From that chapter, it is clear, that the hospital can have wide range of contracted performances, but if the doctor will not enter all of them into the IS, the hospital will not get more money anyway.

The hospital should implement "packages" into the system, which would eliminate possible errors of human element in the process. As there are strict rules on what performance codes can and must be reported together and which material must be reported with these codes, it is easy to create "packages" of these. Then, whenever one of the codes is reported, the rest will automatically be reported as well, so the hospital is reporting really everything they can to get the maximum of money.

Unique code

The main recommendation with the biggest impact is implementation of a unique code. This idea is connecting all of the aims and goals regarding optimization of reporting executed care.

As any patient gets into the contact with a first doctor, he will receive a unique code in a form of a number/letter combination and a bar code. In case the patient only undergoes an outpatient care, the code should be stored with the documentation. If the patient is hospitalized, the code and bar code should be preferably on the person, for example on a bracelet, where it's visible and easy to access.

The code would be directly connected to the patients file in the information system, so it would also work as a back up in case a paper file gets lost. The barcode will be scanned every time anyone will be performing any procedures, any device will be used to perform any procedure, or any medication will be given to the patient. This would be beneficial on several levels:

First, there will be a clear overview of all the executed medical care on the patient. It will be clear who examined him/her, what material was used, what medications is the patient suppose to get and which he has already taken.

Second, since all devices will be scanned as well, it will be easy to tell how much money a given patient costs the hospital on running the machinery etc.

Third, the process automation of inserting information about executed care will make sure, that executed procedures will be left out. When a doctor is filling out the procedures manually, he or she is more likely to forget to put all codes in or might not know that he could use more codes. If not all codes which would be paid by the insurance company are inserted, the hospital is loosing potential money it should be getting. The system would simply insert as many codes as possible to maximize the profit of the hospital.

4 Conclusion

This thesis fulfilled several goals. As the title of the thesis is quite extensive, I considered it important to approach theoretically each aspect of the topic. This was executed at the beginning. Concept of management and its historical development was approached and discussed. Optimization process was brought closer as well as the concept of stakeholders and their importance for any business. However, these terms are general and could be used for thesis about another business as well.

The core of this thesis is about providers of healthcare, insurance companies, reporting executed care and its payment by insurance companies. These sections were approached from multiple angles and discussed in detail on theoretical level.

The practical part then focused on the chosen enterprise – Nemocnice Kadaň s.r.o. All collected data were presented; 3 types of secondary quantitative data as well as qualitative data obtained by interview. To evaluate the economic performance of the hospital in the past decade, financial analysis was executed, which included horizontal, leverage, profitability and liquidity analysis.

The main goal of the thesis is pretty much given already in the title – to optimize the management. That is why I consider the most important chapter 3.8 Final recommendations. Based on theoretical findings and results of executed analysis, recommendations for the hospital management were designed. These ideas were already forwarder to the company and hopefully some of the ideas will be implemented and will lead to maximization of welfare of stakeholders.

In the end I would like to answer 3 research questions, which were stated in the very first chapter. Answers are relatively short, as they only sum up, what was already elaborated in the thesis.

How did change of management in November 2016 influence the economic performance of the hospital?

According to the results of analysis, it is clear, that the change of director and part of the management was decisive for the future of the hospital. Since 2017 the hospital is performing much better financially, which was shown by multiple indicators. It is also performing better, when it comes to amount of executed care. In general, hospital which was about be sold due to poor performance was able to start expanding again.

How can the setting of IS influence income of the hospital?

Setting of the information system influences the income of hospital very much, as it's the main tool for communication between the hospital and the insurance companies, which are the biggest source of income. The IS controls what amount of executed healthcare is reported, but also can control it and avoid errors in advance.

What leadership steps will lead to maximization of welfare?

As once already mentioned in the conclusion, chapter 3.8 describes in detail the recommendations, which were proposed to the hospital. These ideas concern many areas, such as recruitment, environment of the hospital, information systems, way of reporting care, use of feedback from the patients, and proposal of *unique code* for each patient of the facility.

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6 Annexes

Annex no. 1

Groups of medical facilities divided according to “type of facility”:

- Home Health Care
- Health care in social care institutions
- Hospice
- Coroner
- Children's home for children under 3 years
- Children's stationary
- Other children's specialized therapeutic institutions
- Children's Center
- Mental Health Center
- Psychotherapeutic Center
- Hemodialysis Center
- Crisis Center
- Spa Treatment Center
- Blood Sample Center
- Separate Transfusion Station
- Spa house (hotel type accommodation only)
- National Institute of Public Health
- Pharmacy
- Medical Device Dispenser
- Hospital for long-term patients (LDN in Czech)
- Hospital for Tuberculosis and Respiratory Diseases (TRN in Czech)
- Hospital
- Maternity Hospital
- Psychiatric Hospital
- University Hospital
- Medial Emergency Services
- Medical Transport Service
- Transport of Patients with Urgent Care

- Sobering-up station
- Professional Laboratory
- Independent Dental Laboratory
- Opticians
- Association of medical facilities
- Associated ambulatory facilities
- Addiction treatment facilities
- Independent facility of speech therapist
- Independent facility of gynecologist
- Independent facility of psychologist
- Independent facility of physiotherapist
- Independent facility of general practitioner
- Independent facility of general practitioner for children and adolescents
- Independent facility of dentist
- Independent facility of specialist
- Independent non-medical facility
- Rehabilitation institute
- Other inpatient facilities
- Other medical facilities
- Other special medical facilities

Annex no. 2

Types of documents used to report performed medical care:

- 01 reporting of procedures in outpatient care
- 01s reporting of procedures in outpatient dentist care
- 02 reporting of procedures in institutional care
- 02s reporting of procedures in institutional dentist care
- 03 specially reported medicaments and medical devices
- 03s dental products
- 05 reporting of irregular care
- 06x examination/treatment voucher
- 06dp examination/treatment voucher - DP
- 06ft examination/treatment voucher - FT
- 06k examination/treatment voucher - K
- 06orp examination/treatment voucher - ORP
- 06z examination/treatment voucher - Z
- 08 batch cover letter
- 09 data carrier cover letter
- 10 recipe
- 11 recipes for medicinal products containing narcotic drugs of group I and psychotropic substances of group II
- 12 voucher for glasses and optical aids
- 13 voucher for medical and orthopaedic device
- 13P overview of returned medical devices
- 14 voucher for speech therapy aids
- 15 proposal for spa rehabilitation care
- 16 reimbursement of spa rehabilitation care
- 17 proposal for rehabilitation care in a specialized hospital
- 18 proposal for placement of a child in a sanatorium
- 19 proposal for placement of a child in a specialized children's hospital
- 20 Recipe extract
- 21 application for approval
- 22 reporting of injury or other health damage
- 23 reimbursement of health care

- 30 registration sheet
- 31 time period invoice
- 32 batch invoice
- 34 medical transport order
- 35 medical vehicle operation record
- 36 reimbursement of trips of a doctor or other healthcare professional in the visiting service
- 37 reimbursement of emergency services
- 39 reimbursement of travel expenses
- 80 registration of registered insured persons
- 85 medical representation report
- 90 list of performance providers