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INOVACE ŘÍZENÍ ZAKÁZEK VE FIRMĚ

THE INNOVATION OF ORDER MANAGEMENT IN THE COMPANY

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Abstract

The bachelor thesis is focused on the design of a new innovation in a predetermined company. The theoretical part deals with concepts related to innovation and information systems of companies. The analytical part is focused on basic information about the selected company and the current state of awarding contracts. In the last part, a new system of awarding orders is proposed, which should help to assign tasks more efficiently and at the same time better organize the company's schedule.

Keywords

Innovation, task assigning, effectivity, time schedule

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Statement of originality

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In Brno, May 16, 2021

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Introduction

Innovation is part of everyday life, it is all around us. Innovation is change, it is development. It concerns every aspect of being. It is the essence of economic development. Innovation is needed to keep companies competitiveness. Without innovation, there would be no evolution. Schumpeter's theory states that qualitative innovation predetermines cyclical development and comes through changes in the external environment, economic growth and innovation. Subsequently, Drucker theorized that any innovation should begin with an analysis. (Veber, 2016).

Innovation is needed not only in products or services, but also in various internal aspects of business, whether it is work efficiency, employee motivation or other aspects of work. These innovations serve to improve the workflow and facilitate the work of the company's management and employees, which will contribute to everyone's satisfaction.

In this bachelor's thesis I will focus on innovation in the allocation of service orders to service technicians in the company Elmar group spol. s r.o. The company Elmar group s.r.o. focuses on the design and installation of measurement and control systems of heating and cooling systems, but also offers services for these systems. Service is the part I will focus on when designing innovations of the new and more effective system of assigning tasks to individual service technicians.

The work is divided into three parts, namely the theoretical part, analytical part and practical part where I will focus on various types of information relating to innovation and informational system of company.

In the first theoretical part I will deal with the definition of innovation and other related information, the definition of the information system and the description of some external and internal analyzes of companies.

In the second analytical part I will describe the company Elmar group spol. s r.o., for which innovations will be designed and subsequent analyzes of this company together with a description of the current method of allocating service orders.

In the last practical part of the work I will propose the innovation in the assignment of service orders to the relevant service technicians, which will include description of the

innovation, description of individual necessary steps to implement this innovation and financial and time plan for implementation. I will end the chapter with a brief evaluation of the proposed innovations.

Objective of the work and methods of processing

The aim of this bachelor's thesis is to design an innovation with the allocation of orders to service technicians in the company Elmar group spol. s r.o. An information system in which the company already operates will be modified for these changes. The innovation will shorten and streamline the planning and allocation of individual orders and services to the relevant employees of the service team.

In addition to the design of innovations, the thesis will also include theoretical concepts related to innovation, information system and analyzes used in the analytical part of the work.

In the above-mentioned analytical part will be basic information about the selected company Elmar group spol. s r.o., elaborated analyzes of the external and internal environment and a description of individual steps of the current course of assigning tasks.

This part is followed by the innovation proposal itself, its individual steps, the process of future implementation of changes in the system and proposals for further modifications outside the original innovation proposal.

1 Theoretical basis of the work

1.1 Innovation

1.1.1 Definition of innovation

Currently, there are rapid and constant changes, in all spheres that surround us. Change and the need to adapt are also important demands that are now more pronounced than ever on all companies and enterprises. If a company or firm wants to maintain a stable position in the market and in the competition today, it must be able to respond to changes and achieve a competitive advantage over the competition using an appropriate strategy.

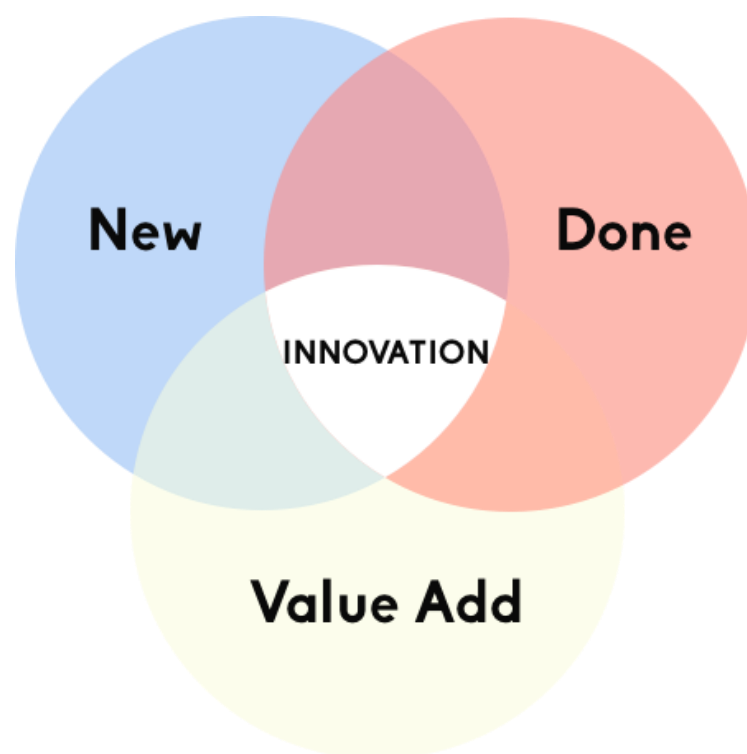
The concept of innovation is based on the Latin term *innovare*, which we can translate into Czech translation as the verb *renew*. From an economic and business point of view, we understand innovation as improvement. Innovation is a whole complex process, from the very brilliant and original idea, to its development, to its actual implementation. However, it should be noted that innovation is not only about a great idea, a new idea or creativity of a particular employee or management, it is necessary to translate this idea into a specific innovation strategy of the company, which will eventually be actually implemented and practiced. As already indicated, a number of excellent and fresh ideas do not always lead to a specific innovation, which is brought to the actual implementation, for various reasons. Due to its economic unattainability, due to technical impracticability, or due to practical impracticability (Drucker, 1993).

Innovation is the most important key and driving force in the evolution of all organizations. It is through innovation that companies move forward, do not stay in one place, respond to market and customer changes, and introduce new strategies, approaches or products. It is on the basis of innovations that new products are introduced, that they are constantly improved and gradually developed, that work efficiency is increased, costs are reduced or quality is improved. Innovation tends to be supported by management, and is an integral part of good business management (Častorál, 2008).

Businesses can innovate not only their products or services, but also many other components of any business, including technology, management skills, the entire

organization, marketing strategies, and individual processes. A company that wants to maintain its stable and strong position in the market must implement an innovation policy, must respond to constantly evolving competition, and to constant changes in the business market, precisely through the introduction of appropriate innovations (Synek and team, 2011).

It is the innovation of the company that helps to establish itself on the market, and to win the competition. Innovations represent the culmination of a whole series of scientific, technical, organizational, financial and business activities and, taken as a whole, form an innovation process that consists of an inventive and innovative phase (Synek a kolektiv, 2011).



Pic. 1: Innovation

Source: www.medium.com

1.1.2 Division of innovations

As with all complex and complex processes, innovation can be divided according to several parameters and aspects, where it mainly depends on the point of view from which

we look at them. In the professional literature, we most often encounter the division of innovations on the basis of what is the object of a particular innovation, in other words, according to what is being changed or improved. In such a categorization, we recognize several basic groups, namely (Dvořák, 2006):

- **Technical innovations:** these involve the creation of specific new products, the creation of new processes for the creation of new products, and significant technical changes in existing products and processes, or the improvement of existing products.
- **Non-technical innovations:** this category includes all non-technical issues, there are innovations in the organizational, business, marketing, social or environmental spheres.
- **Social innovation:** innovations in this group are aimed at innovating existing working conditions, improving the skills of the company's workforce, improving working relationships, changes in existing forms of employee remuneration, improving the culture of the working environment and the overall moral climate.
- **Cultural innovation:** this category also includes long-term and long-lasting changes in a particular company, which are conditioned by several key factors, most often including the need for innovation, competence, motivation, and the main source of these innovations is the particular company and its individual members. to achieve the set goals through new means and new procedures.

On the basis of professional literature, we often encounter another division of innovations, which lie on similar principles as the previous division. Two experts, Tidd and Bessant, came up with the so-called 4P innovation theory in 2009, and they divide innovation in the company into categories:

- **Product innovation** - This category of innovation includes changes in specific existing products or services that the organization already offers to customers in the market. However, this may also include newly introduced products, newly developed improvements or completely new services. A typical example of this category is the continuous improvement of single-brand mobile phones over the years or the launch of completely new products, such as a book reader, which was to become a competitor to classic books.

- **Process innovation** - In this category of innovation, there are changes in the ways in which specific products or services are created, manufactured or delivered. However, process innovations may involve others other than those through which products are created and delivered. It can be basically any process that takes place in the organization or is implemented outside the organization.
- **Position innovation** - In this category, there is most often a change in the context in which certain products or services are still presented. Such innovations use a specific object that has served one purpose and invent a completely new purpose for it. The most common example is a ball, which is no longer used only for playing ball sports, but now also as an excellent aid in rehabilitation.
- **Innovation paradigm** - Within this group, there are changes in the "subliminal" mental model, which forms the framework of what the organization does. An example is a university that would stop testing all its students from what they have learned. The basic view of the meaning of teaching would change.

1.1.3 Sources of innovation

Of course, the introduction of innovations into a company also brings with it many different risks, and it is usually a financially demanding process. For this reason, it is absolutely necessary to know why we want to incorporate specific innovations into the company, whether they will be beneficial and to our benefit. It is also of the utmost importance to carry out specific innovations strategically and with the utmost forethought. It can also be an innovation that can be wrongly chosen, does not meet with interest, or even a particular company can lead to failure and bankruptcy. This would not be anything special in the commercial market. Several times in history, the company has come up with a "hot news", which has resulted in a significant decrease in sales and large financial losses for the company itself (Synek a kolektiv, 2011).

The most frequently mentioned and most important source of innovation is the customers themselves. It is the customers who are the reasons why companies are constantly coming up with new products or improvements to existing products. The consumer behavior of customers is constantly changing and evolving, according to current fashion trends and world thinking. It is the customers that companies have to take into account the most,

because it is usually they who decide whether a particular product and therefore the innovation will be successful or not (Gault, 2000).

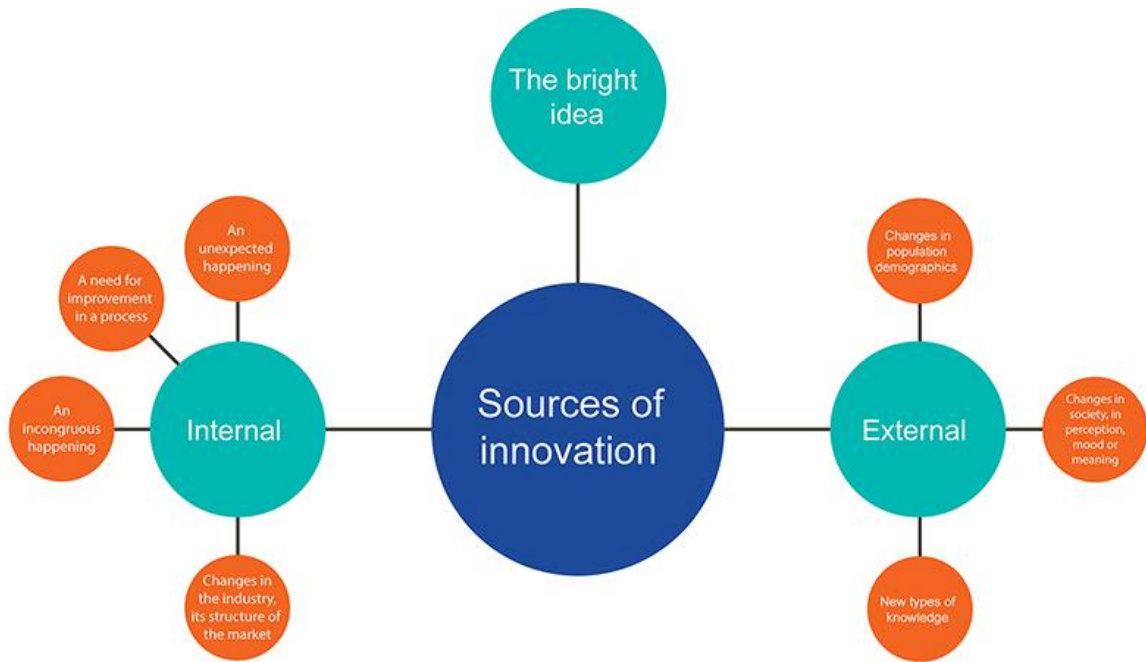
Sources of innovation are most often understood in two different senses, in the first one the sources form specific information and stimuli so that the introduction of innovation makes sense at all, and in the second they are own inputs, without which innovation could not be even realized (Gault, 2000).

In his book, Drucker (1985) describes 7 basic innovation opportunities. It is these seven basic points that are cited by the vast majority of professional books. These basic opportunities specifically include:

- **Unexpected events** - This innovative opportunity stems from unexpected success or, conversely, unexpected failure. You need to constantly monitor the trading market, and keep track of your competitors, and look for suitable opportunities. How are our biggest competitors doing? Did they come up with any innovations? Is customer demand for a specific product changing? Are customer's shopping behavior changing, and can we take advantage of these changes? Can we find something positive about a possible failure?
- **Contradiction** - In this innovative opportunity, we compare our assumptions and reality. We can often find a significant discrepancy between how we anticipate the development of events and what develops in the real world. It is in situations where there is a smaller or greater discrepancy between assumptions and reality, where the source of those discrepancies are, for example, complaints and comments from customers, they help to reach concrete and fruitful conclusions, which then stimulate that innovation process.
- **Process cause** - Innovations need to be introduced due to the need to introduce a certain new process. If we try to identify and reveal weaknesses within our company, then we are able to eliminate them. The source of innovation thus comes from one's own observation, the company's internal environment, not from the external environment, such as customers.
- **Changing the structure of an industry or market** - As mentioned several times, the market and the sector represent dynamic environments that are constantly changing. This fact can represent ideal opportunities for introducing new

innovations. A shining example is the sectors that have been regulated by the state for a long time, and those barriers will be removed, then the first companies to respond tend to be successful.

- **Demography** - An important factor for the possible introduction of new innovations are also demographic indicators, for which we also observe constant development and constant change. Specifically, we are witnessing an ever-increasing population size, rising incomes, living standards of the population, rising levels of education, declining unemployment rates. It is the combination of knowledge of these specific data and constant development, together with appropriate market segmentation and appropriate targeting, that companies have a very valuable method of innovating their specific products or services.
- **Change in perception, meaning and mood** - Even humans are no exception to evolution. Populations, as well as specific individuals, change over time, there are changes in their way of life, in their opinions and professed values. Businesses should keep in mind the changes in human moods, habits and desires, otherwise they could very simply offer already outdated and obsolete products. An example is the current positive trend and global efforts for a greener approach to our planet. Companies have taken advantage of this trend and offer in large products products made of natural materials, environmentally friendly materials, fingerless products, etc.
- **New knowledge** - Today's world can be called without exaggeration very modern, with rapidly evolving modern technologies, and science as such. Today, more than ever, companies and organizations have the ideal opportunity to respond to this progress and use it to their own advantage. A typical example is the rocketing growth of Internet users, and the associated sales activities of companies.



Pic. 2: Origins of innovation

Source: www.open.edu

1.1.4 Innovation process

All processes that come from human hands and therefore represent human activity need to be managed effectively, while specific tools are also needed to achieve the set goals, and thus bring the process to a successful end. The introduction of innovations into a specific company is not an exception. As we have already mentioned in the previous text, the introduction of new innovations into the company represents a whole complex process, which consists of many phases. That is why there is an area we call innovation management or innovation management. This field exists precisely because companies have found during their existence that the introduction of new innovations into the company requires supervision and effective management.

What exactly should we imagine under the term innovation management or Czech innovation management? Innovation management is a specific business area that deals with the introduction of something new into the existing functioning and operation of a particular organization or company, or into the existing portfolio of their / its products or services. As we have indicated in previous sections, innovation is closely linked to quality

management, and therefore the methods of the two areas overlap considerably (Drucker, 1985).

The professional definition of innovation management is most often that innovation management is *“a comprehensive tool for effective management of innovation processes in economic entities, which aims to rationally and effectively manage innovation, which must quickly and flexibly reflect the needs of external customers, municipalities and states with saturation of needs of both market and producing subjects”* (Kislingerová 2008, p. 212).

To put it simply, innovation management is an area of a company that deals with virtually everything related to innovation in a particular company or organization. Specifically, this area deals with innovative methods and innovative analyzes. As we have already mentioned, it is innovation that drives companies forward, develops them and pushes them forward. In short, innovation is the driving force behind the evolution of all players in the trade market. Thus, the ability to manage the introduction of new innovations represents a kind of natural process and the natural ability of companies, which facilitates the introduction of new products, services, processes or procedures into the normal and existing operation of each company (Synek a kolektiv, 2011).

Other professional literature characterizes innovation management as a *“synergistic set of decision-making procedures, methods and network models, leading to the achievement of set goals. Through planning, organizing, motivating, controlling and regulating activities”* (Kavan 2007, p. 1). As we have already mentioned, innovation is highly related to creativity, ie the art of inventing new and original ideas, and it is innovation that is the result of creative activity that causes qualitative changes in the specific management of the company, products, services or processes. While the newly introduced innovation is appreciated, it is the customer for whom the innovation represents a new added value, for which he is ideally willing to pay the required financial amount (Synek a kolektiv, 2011).

In all cases, the innovation process itself begins first with a detailed analysis of the market, competition and the internal and external environment of the company. Innovation management must be aware of the current market situation, know the competition, and current trends and customer wishes. The process then continues with an innovative stimulus, when a new and suitable idea is invented to improve the current situation of a

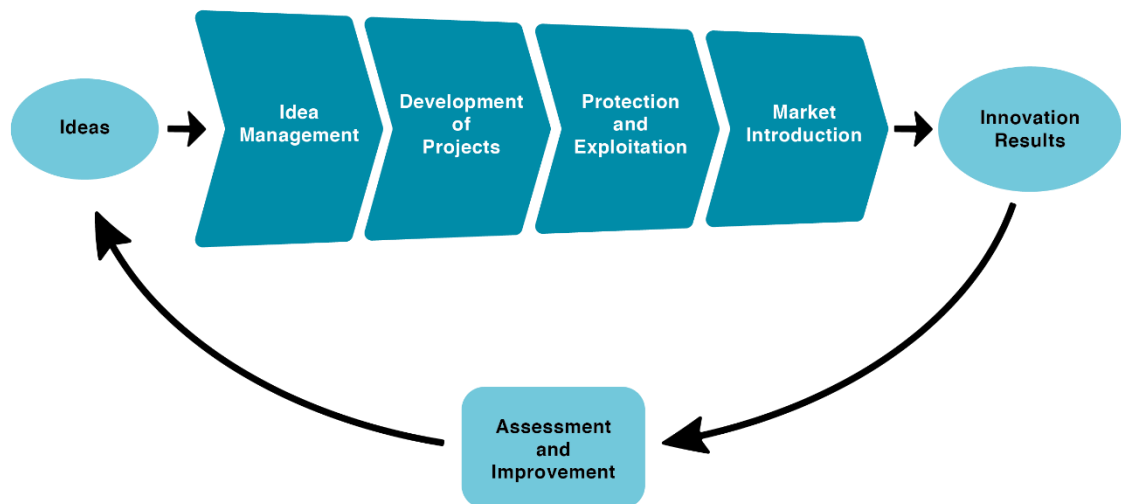
particular company, and ends with a finished innovated product, service or process. The most important prerequisite for the correct introduction of innovation into the company is, above all, its support by the company's management, and by the employees themselves, who manage, correct, implement and evaluate the results that innovation has brought to the company. The whole innovation process should be primarily in direct accordance with the overall existing strategy of the company (Kavan, 2007).

Within the professional literature, we will read about the various stages of innovation processes. One of them is the three phases of the innovation process, which Skokan (2004) mentions in his book:

- **Invention** - At the very beginning of each innovation process there is always a new and interesting idea, which must first be elaborated in detail, design the course of its introduction into the company, analyze it in detail and try to predict whether this innovation will cause economic benefits to the company. If the analysis confirms that the introduction of this innovation would be beneficial for the company, the management of innovation will get to the next stage of the innovation process.
- **Adoption** - In the second phase, this particular innovation will be mastered by the company itself, as well as the first contact of a newly innovated product, service or process with customers in the commercial market. It is this second phase that has a great influence on the financial and investment aspects of production or sales. Adoption can take a short or long period of time, until a particular company has worked on whether that particular newly introduced innovation is successfully accepted by the target group.
- **Diffusion** - In the last phase, news of the newly introduced innovation is disseminated to the general public, ie rather to new potential customers. Unfortunately, it often happens that spreading the news of a new innovation is not as fast as a particular company would like.

Another model that concretizes the individual phases of the innovation process is again a three-phase process, which is also suitable for the introduction of new innovation processes within the company. This particular model then consists of phases (Tidd et al., 2007):

- **Survey phase** - As the name of this phase suggests, in this initial step, the company analyzes the entire external environment of the company in detail, efficiently and systematically, while looking for new and unique innovation opportunities. Most often, the source of innovative opportunities are specific changes in the existing business market, ie innovative changes in the company's direct competition and changes in the business behavior of potential customers (change in trends, changes in demand, changes in moods and desires of potential customers). However, the development of new modern technologies often plays a key role in this phase. In other words, companies search for and identify those areas and products in the existing market that, according to the analysis, should represent the greatest potential for introducing new innovations, and then attach the most significant weight and importance to these defined areas and products.
- **Selection phase** - The middle step is the opportunity to turn the three basic inputs into a concrete form with which the company is able to continue working. This step is often called the innovation concept. Specifically, the three basic inputs mentioned are (a) information on technological and market opportunities, (b) the current technological level of a particular company, and (c) the interplay of a new innovation with the overall strategy of the company.
- **Implementation phase** - After the company has analyzed and thoroughly considered all innovative concepts and selected specific innovations in which to invest its future efforts, the implementation or introduction of these specific new processes into the company's internal environment, resulting in the introduction of innovative products or services to the commercial market and among potential customers. It is during this phase that the company has a unique opportunity to find out whether the performed analyzes, estimates and predictions or the expected potential for change corresponded to real values.



Pic. 3: Innovation process

Source: www.elearning.innovationdevelopment.eu/

1.1.5 Innovative organizations

As we have mentioned several times in previous chapters, innovations are not only created, but also aimed primarily at customers, so companies should think primarily about the wishes and desires of their customers, and should try first and foremost to please them. For every company, the customer should come first, and should therefore be a so-called customer-oriented company. What should an ideal business look like? What company do we think of as an innovative company? Within the literature, there are no precise definitions or precise instructions for business management on how to become a successful innovating company.

Under the concept of an innovative company, many imagine a successful and courageous company, led by innovative and successful people who are not afraid to invest and take risks in the introduction of new innovations. Although there are no clear definitions or manuals, many authors have already tried to write down the characteristics of successful innovative companies. It is a list of various aspects that characterize successful innovative global companies.

He wrote this basic characteristic of a successfully innovating company in several basic points in his book Bessant (2007). These specific characteristics are:

- **A common vision of the company and a willingness to introduce new innovations**

Management, top management and employees themselves must share a common vision, have clearly defined goals and be fully committed to the company and the fulfillment of these specific goals. The goal must be clearly defined, simple. The individual activities performed by employees should be meaningful in order to promote the work commitment and loyalty of employees. The most successful and largest companies today are united by one fundamental characteristic, namely trust in their employees and support for their individual projects and efforts to innovate. If innovation makes sense, it should be supported by top management.

- **The right structure of the company**

The structure of the whole company is an essential aspect for the proper functioning of the whole company. The company should be structured very flexibly, ie so that it is able to respond to all potential circumstances and possible problems. The company should create an ideal environment for all its employees. If the employees are satisfied, more work will be done, more innovative ideas will be invented. The company should support creativity in its employees, develop the human capital present, educate and provide subordinates with new opportunities. An appropriate structure also supports mutual communication of employees, better mutual cooperation, sharing important information and knowledge.

- **Strong personality**

There should be a strong personality in the top management, who is usually also behind the very foundation of the company, and who encourages the emergence of new innovations or at least fundamentally supports them. These prominent personalities then appear in public, communicate with the media, and with the masses of people. Even

during the introduction of innovations and during the innovation process, critical moments can occur when it is the support of this strong personality that can cause the company to remain "on its feet". Strong management supports and motivates its employees, helps them implement their own projects and overcome their own problems. There can be several such strong personalities within one company, they are experts in their fields, who know their field, their subordinates and manage the entire specific branch of society.

- **Teamwork**

Almost no innovation comes from one person. As the people say, "more heads, knows more" and there is always a whole team of experts behind every innovation. If more people work together, there are many different personalities, with different perspectives, more knowledge, more ideas, more thoughts. A good atmosphere in the company, a cooperating team that pursues a common goal, is always an ideal environment for new and interesting innovations. Teams are not created by chance, individual people are selected by top management, and the company must be able to build a team and supportive environment.

- **Human capital development**

It is a logical fact that investing in the development of human capital, which is available within a particular company, will result in the growing innovative capacity of the organization. Each individual employee is unique, and has their own unique human potential and capital that needs to be supported and developed. If we invest in the development of individual employees, it will pay off in the form of better results, higher knowledge and better ideas. On the other hand, the employees themselves will be better motivated and more loyal to a particular company, as they will be well aware that top management trusts them and invests in them.

- **Communication**

Communication plays a crucial role in family, partner and employee relationships. Many serious problems often arise from poor or missing communication between employees, between employees and management, or between people in management. Communication in the company must use as many available channels as possible and must take place in all possible directions.

1.2 Company information system

The company's information system is known by many other nicknames, including Enterprise Information System, corporate information system, information system or abbreviations PIS, IS, IS / ICT, EIS (Molnár, 2009).

However, all these terms are defined in the same way, they are specific technical means known as information technology, whose task is to provide the required functionality for the collection, transmission, storage and processing of all data with which a particular company operates. In other words, specific information that is used and operated within this system is part of the company's information system, and individual users, ie people who work with this data, also represent an integral part (Molnár, 2009).

The information system of a company represents the so-called non-sales property of a specific company, in other words it cannot be sold or bought by another company, and it is present in all companies, firms or organizations, it cannot be separated from the company in any way. The company's information system is therefore an integral part of every existing company. In the place where any occurrence, transmission or sharing of information occurs, there is also an information system. It is also necessary to mention that the creation of the company's information system does not require technological conveniences or modern devices, the system is created when the information is shared in paper form (Basl and Blažíček, 2008).

Humans are beings who are characterized by mutual communication and information sharing. Without this quality, nothing could exist at any stage of our development. Even companies are characterized by the presence of a large amount of information. We can say without hesitation that each organization requires a large amount of different information to function. Every business needs to share, receive, transmit, and somehow store information. As we mentioned in previous chapters, an organization also needs a

large amount of its external environment, that is, its customers and competing companies, in order to gain an advantage in the context of competition. In the case of a competitive market, we can say that whoever has a larger amount of essential information has a greater probability of success, and thus higher profits (Molnár, 2009).

In order to make the best use of the information obtained and to obtain the most appropriate and necessary information, we need to have the necessary and appropriate technologies, and we need to link and connect all the variables. We then name all these variables as the company's information system. The basic principle of the information system is (Molnár, 2009):

- data collection
- data retention
- data transfer
- data processing
- providing data and information

1.3 SLEPT analysis

SLEPT analysis is an examination of the external environment of a company. These are factors that affect both the company's market position and its operation. The analysis of the external environment should come before any strategic decision of the company, together with analyzes of the industry environment such as Porter's analysis of the five forces and an analysis of the internal environment of the company.

SLEPT analysis consists of several factors that affect all companies. The name of the analysis already suggests what these factors are:

- Social factors
- Economic factors
- Political factors
- Technological factors

SLEPT analysis can also be administered in other ways, such as SLEPTE analysis, where ecological factors can be added to the factors, or as PEST analysis, where socio-economic factors are used in one. (Smejkal, Rais, 2013)

1.4 Porter's analysis

In order to properly examine a company, it is necessary to focus on its field environment, for example, using the model of Porter's analysis of five forces. This model consists of five factors influencing mainly the company's position on the market and its impact on the market in the field:

- Existing competitors
- Potential competitors
- Substitutes
- The power of suppliers
- The power of buyers

This analysis is used not only before the strategic decision of the company, but also in the evaluation of this already made decision. Thanks to it, companies can find out whether further changes are needed or not. (Keřkovský, Vykypěl, 2002)

1.5 SWOT analysis

The SWOT analysis is used to analyze the internal environment of companies, specifically their strengths, weaknesses, opportunities and threats to the company. However, this analysis can be applied not only to companies and businesses, but also to individuals.

For this analysis, information can be drawn from various sources. These sources can be previously performed SWOT analyzes or other performed analyzes of the company or, for example, simple brainstorming.

All performed SWOT analyzes can be compared with each other to see if the company has made progress or vice versa. At the same time, the individual parts of this analysis can be compared with each other. (Keřkovský, Vykypěl, 2002)

2 Analysis of the current state

2.1 Basic information about Elmar group spol. s r.o.

The company Elmar group spol. s r.o. deals with the design and installation of measurement and control systems. The systems are mainly used in heating, cooling and air conditioning systems. In addition to regulation, the company also deals with building security and offers warranty and post-warranty service. Thanks to 25 years on the market, they are also able to optimize ready-made devices.

They implement projects in all possible sectors, from office buildings through hospitals and their operating theaters to smaller boiler rooms supplying apartment buildings and family houses.

The main partner and supplier of measuring and control technology is the global company Honeywell, spol. s r.o. But they also work with other leading suppliers such as ABB, Siemens or Belimo. [1]

2.2 Company history

The company was founded on January 6, 1996 by Petr Volný, a graduate of the Faculty of Electrical Engineering at BUT. The company started as a typical garage company. The first office, which was rented in an office building in Prostějov, was a 2x3 square meter walk-through office without windows. For the first year since the company was founded, Petr Volný worked alone. At the beginning, he did projects for other companies, but in the same year he won a large contract for the regulation of five boiler rooms for the Prostějov House Administration.

In 1997, the first employee was hired, who is now the head of the company's Brno branch, a salesman and a manager.

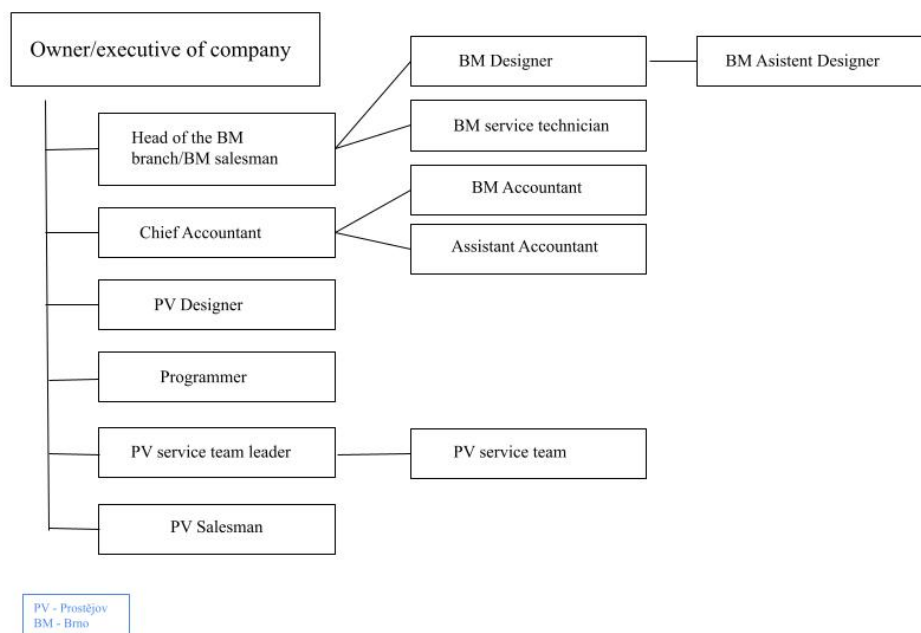
A few months later, another employee was added to design and implement the regulation. This year, the company provided one of the first online dispatching centers in Moravia for the Prostějov House Administration.

In 1999, the construction of a new hospital began in Prostějov, where the company won a large contract and where it still provides regulation.

After two relocations, the company bought a house in Držovice in 2000, which became today's company headquarters.

With increasing orders, it was necessary to expand the work team. Now the company has been successfully on the market for 25 years with 15 employees. The expansion of the workforce and especially the service team also led to the introduction of an online service system instead of paper service reports, which will be the innovation proposal in this bachelor's thesis.

2.3 Organizational structure of the company



Pic. 4: Organizational structure of company Elmar group spol. s r.o.

Source: Own

The organizational structure of society is relatively chaotic and often intersects in different ways. The company works more like one large team, where most of the orders and their individual parts are assigned by the owner of the company and then by the head of the Brno branch and the head of the service team in Prostějov. But it can also overlap in the sense that the service team can also be given a task by designers and others. In the same way, someone from the Prostějov branch can assign work to a service technician of the Brno branch and so on.

2.4 SLEPT company analysis

2.4.1 Social factors

Social factors affect the company in several factors. The company is based in two cities, but operates almost all over the country. The company's headquarters are located in Prostějov, but the city is too small for the company to stay on the market only from orders in this city, even if it wins all orders. Therefore, the company is trying to gain customers throughout the country, especially in larger cities. Also, some of the largest customers are government institutions such as hospitals, so the larger the city, the larger the hospital, the more contracts.

The unemployment rate for society is not fundamentally influencing. However, it is still true that higher unemployment is a little more advantageous for companies. Thanks to this, the company has a better chance of getting better staff.

However, the company is greatly affected by the availability of qualified people. The company is focused on a relatively narrow segment of fields, all of which are relatively technically demanding. Therefore, the advantage is that the company is located near the BUT technical school, from where it can get other graduate employees who will have the opportunity to continue their education at work. In addition, most of the company's employees, including the owner, graduated from this school.

2.4.2 Legislative factors

In addition to the general employment conditions, the company has to comply with many laws relating to the field, so it is much influenced by legislative factors. The services

provided by the company contain several different parts for which the company must have valid trades.

The rights around the field of society are constantly changing, which is very difficult for the company in the sense of constantly monitoring changes and unfinished legislation, so that no rights are violated and everything necessary is observed.

Another major disadvantage is that the rights surrounding this field are often meaningless and ineffective. The absence of functionally elaborated e-government leads to unnecessarily lengthy paperwork.

Also, as a large proportion of customers are state institutions, the company often has to go through a state-run tender. Great complications for the company are caused by very complicated guarding and searching for new announced orders.

2.4.3 Economic factors

The company has many long-term service contracts with various customers, so it is affected by inflation. Contracts must therefore be easily modified with each inflation so that the prices are accurate for the service and the value of money. Likewise, the company affects the state of the exchange rate due to the fact that it buys most of the necessary material of the company abroad.

Due to customers in the state administration, it is important for the company that the state is not in a large budget deficit. As a result, the state could transfer the money differently and not be able to pay for the work done by this company.

2.4.4 Political factors

As already mentioned, one of the biggest political and legislative problems is the lengthy paperwork that companies would be spared with a fully functional equivalence.

On the contrary, it is positive for the company when the state supports foreign companies in trading in the Czech Republic, because multinational companies then build additional production halls, stores and so on, which leads to job opportunities for the company Elmar group.

2.4.5 Technological factors

Work in this field involves constantly inventing innovative control procedures to make everything easier for users. This invention of the company's innovations facilitates ever faster technological development. This allows the company to create increasingly user-friendly controls.

However, the speed of technology development also leads to an increase in the speed of moral obsolescence. Because of this, the company must constantly replace devices and update its software, as support for older devices with the latest software ends quickly. But this can actually lead to more opportunities for orders, because at least the software must be updated every couple of years and all of these updates are not free.

2.5 Porter's analysis of society

2.5.1 Existing competitors

There is a relatively large competition in the field of the Elmar group. The BUT University produces a lot of well-prepared people for work in this field, and because of this the number of competitors is constantly increasing. The main competitors include Synerga a.s., Synett s.r.o., I-THERM spol. s r.o. and EZH a.s.

Elmar tries to fight the competition in several factors. The company strives to offer better services and products in terms of tailoring the system to the customer. Thanks to the fact that the company has a very high quality work team that strongly understands the field, they are able to create regulations tailored to any requirements.

The company also successfully adheres to the latest technologies and brings innovations in control and management of regulations. It also has this opportunity thanks to cooperation with major suppliers who, despite their global reach, receive comments on the modifications of their products from this small company.

Another certain advantage of the company is the relatively low operating costs. The company is based in a privately owned house, which is also located in a small town, where services are generally cheaper than, for example, in metropolises.

2.5.2 Potential competitors

Entering the market for new entrepreneurs in this field is not easy. New entrepreneurs have no relationships built and therefore, in order to win a contract, they simply have to sell their services at the cheapest price. At the same time, however, they do not yet have permanent suppliers, which usually leads to purchases without discounts. Therefore, in order to sell services as cheaply as possible, the selling price usually only covers the costs and they have to sell their own work almost for free.

However, this rule applies rather to larger contracts, where a tender is announced and the price of the service is decisive. But in the case of smaller orders such as the headquarters of smaller companies or large family houses, it is true that customers are more interested in references. In this case, it is necessary to have some experience and more orders in a row. Therefore, new entrepreneurs in this part of the industry have almost no chance of winning contracts.

2.5.3 Substitutes

There are certain threats to replacing the services that the company offers. One of these threats is supplied boilers with their own control system. Some companies producing heat boilers have decided to expand their portfolio and already offer an integrated standardized system for their boilers.

A similar threat is that generally standardized systems will be used in the state and will not be adapted to individual customers. Germany, for example, works in this way, where only four standardized heating and cooling control systems are now in use.

Fortunately for Elmar group, standardization is not possible everywhere. Especially in industry and healthcare, where individual control is required for each hall or operating room. In the same way, standardization probably will not occur in the Czech Republic just because of the nature of the Czech people, when customers are not willing to adapt to general systems and require everything tailor-made.

2.5.4 The power of buyers

The power of buyers is relatively large. The price criterion is crucial in the tender for new contracts at large companies and especially state institutions. Therefore, in order for a company to win the contract, it must be relatively low in price.

When it comes mainly to quality, companies have to prove in some way that they are better than the competition. This includes not only offering a better price, but mainly the ability to create a system exactly according to customer requirements and great references.

Good relationships with existing customers are also essential. Due to the fact that the Elmar group focuses mainly on larger institutions, a large part of customers are regulars. Thanks to this, the company also obtains other orders issued by these customers. At the same time, however, they also require certain advantages, such as faster service, a better price, and so on.

2.5.5 The power of suppliers

The main suppliers of the Elmar group include Honeywell spol. s r.o., Amit spol. s r.o. and METZ CONNECT GmbH. Firm has dozens of different suppliers and the reason for that is that the company tries to be as independent as possible, so that when one of the suppliers fails, it is easier for the company to replace the supplier. However, the company has a certain dependence on only one supplier, Honeywell.

The big disadvantage of relying on this major vendor is that Honeywell has to release up-to-date products to enable the Elmar group to innovate its system control. On the contrary, the main supplier's advantage is above-standard discounts, which allow the Elmar group to reduce the price of its services in order to win more contracts.

In addition to the main suppliers, the company also has some local ones, where, on the contrary, they are dependent on this company. As a result, the Elmar group can influence many factors, such as prices or delivery dates.

2.6 SWOT analysis

2.6.1 Strengths

One of the company's biggest strengths is a very experienced and qualified team. All employees of the company had to go through the studies needed to perform their work and at the same time have the opportunity to continue their education in the company. Also, thanks to the fact that the employees have not changed much during the 25 years of the company's life, they now have a lot of experience, which they use in improving their work and innovating the field.

Another great advantage is the very good technical background of the company. In addition to excellent equipment in the form of computers and programs, the company's headquarters also have the necessary equipment to test a large part of the systems created for customers, so that everything goes well during the implementation of orders.

A very crucial part is a stable portfolio of suppliers. The company has been purchasing from most suppliers for many years, thanks to which it has great advantages in terms of discounts, reliability of deliveries and more. As mentioned earlier, Honeywell spol. s r.o. is the main supplier of the company and thanks to many years of cooperation, this worldwide company also listens to the opinions of the owner of the Elmar group and offers really above-standard discounts.

Just as a company has a stable portfolio of suppliers, so it has a stable portfolio of customers. Elmar group rely on a stable portfolio and is looking for longer-term cooperation rather than onetime contracts. These customer relationships also make it easier for the company to obtain additional orders listed by that customer.

An unforgettable strength of the company is its financial side. The company is financially stable, without debts, and in 25 years of life, the company has never been at a loss.

2.6.2 Weaknesses

A very weak point of the company is the dependence on a very narrow number of employees. Since the company has only 15 employees, everyone is needed. Most employees even take only part of their vacation per year and normally work overtime.

However, these employees also do this work and this amount of work voluntarily, because they enjoy it. But it also means that if a company loses one of its employees overnight, it would be a problem.

Another disadvantage is the very narrow specification of the field. It is not easy for the company to get new employees with basics in this field and it is almost impossible to get employees with knowledge and as experienced as employees who already work for the company.

In the last few years, the company has hired a relatively large number of employees. Until then, only basic management was needed and employees were able to agree on everything more or less themselves only under the control of the owner, who also represented several other job functions in the company. Now, however, with more employees, this needs to change. The company now lacks proper management and the weakness of both the company and the owner is that he postpones his transition from other jobs to manager. This also includes the absence of also one more job position, which is service dispatcher. This job position could be also done by the owner of the company when he accepts the position of manager of company.

Simultaneously with the increase in the number of employees, mainly on the part of service technicians, the position of service dispatcher is beginning to be missing. Now, service orders are accepted by several different people, and together with the still not fully functional information system, there are complications in clarifying the acceptance of orders and the subsequent assignment of tasks.

The last fundamental mistake of the company is the unresolved handover or dissolution of the company. The company has only one owner, and in the event of his retirement, let alone sudden death, it is not resolved what happens to the company next. Whether it is dissolved, sold or taken over.

2.6.3 Opportunities

The company has great opportunities thanks to gradual automation in industry, healthcare and households. So far, the company focuses more on the control of heating and cooling systems, but it is able to adapt its systems and control equipment like lights, electric blinds, temperature in fridge and basically anything that can be make “smart”.

2.6.4 Threats

As a significant part of the customers are state institutions, the big threat is the state budget, respectively the state debts and the suspension of payments for some services. A similar problem is the cessation of investment in industry.

Boiler manufacturers are one of the aforementioned threats, integrating a standardized control system into their boilers and at the same time offering subsequent service.

The last threat is the overall standardization of all systems. In some countries, a great deal of standardization has already taken place and only a few standardized systems are used. This is not yet the case in the Czech Republic thanks to the completely different type of thinking and the need to own tailor systems, but standardization is still threatening.

2.7 Current status of contract allocation

2.7.1 Acceptance of the order

The current order acceptance system works electronically. A new or existing customer orders the company's services by calling the company's owner's office or the secretariat or sending an email.

This system works well enough because orders must pass first through the company owner, service team leader or accountant (also secretary).

2.7.2 Contract award

After receiving the order, there is a complicated process of awarding orders consisting of lengthy telephoning of all participants.

When the accountant accepts the order, she must pass on all the information to the owner of the company, who then cannot directly assign the work to any of the service team members, but must consult with the service team leader. Which is unnecessarily time consuming, especially if the service manager is at a service station and is out of reach. Only then does the manager assign the job to a technician, whom he must reach again at the right time, which leads to a lot of missed calls. The whole process is unnecessarily lengthy and complicated.

Previously, no more efficient way was needed, because the company employed only one service technician for the Brno branch and one for the branch in Prostějov. In the last three years, however, the company lost its technician in Prostějov and instead, due to increasing work, it gradually hired four new service technicians, including the head of the service team. All these technicians fall under the Prostějov branch of the company.

2.8 Company information system

To improve the service reporting system, the company decided to use the services of a company supplying information systems to small businesses and create an additional section focusing only on entering service activities.

2.8.1 Information system suppliers

Versino s.r.o. is the main intermediary of the SAP Business One information system for small and medium-sized companies in the Czech Republic and Slovakia.

The program is offered to companies mainly in the fields of production, service, engineering, retail and distribution. For each company that orders the program, it is specifically tailored to the requirements of each company. At the same time, integrated accounting functions remain in the program.

Versino s.r.o. is a subsidiary of Versino AG. It also has branches in Germany, Austria and Switzerland. Versino s.r.o. has offices throughout the Czech Republic.

Since 2009, the company has held the highest SAP GOLD Partner status and is rated as the most successful vendor of the SAP Business One system in the Czech Republic and Slovakia. [2]

2.8.2 Information System

SAP Business One is one of the most globally widespread information systems for small and medium-sized companies. It offers several functions from accounting, through financial data, purchases, inventory tracking, to project management. The system allows to have all the necessary information in one place and in real time.

The whole system was designed so that it could be adapted to each company as desired. The system can change over time and adapt to changes in society. It is used directly in the system premises of a designated company or on the cloud, which SAP Business One also offers for a certain monthly amount. The system itself runs on two platforms, so each client can choose between SAP HANA or Microsoft SQL server platforms. [3]

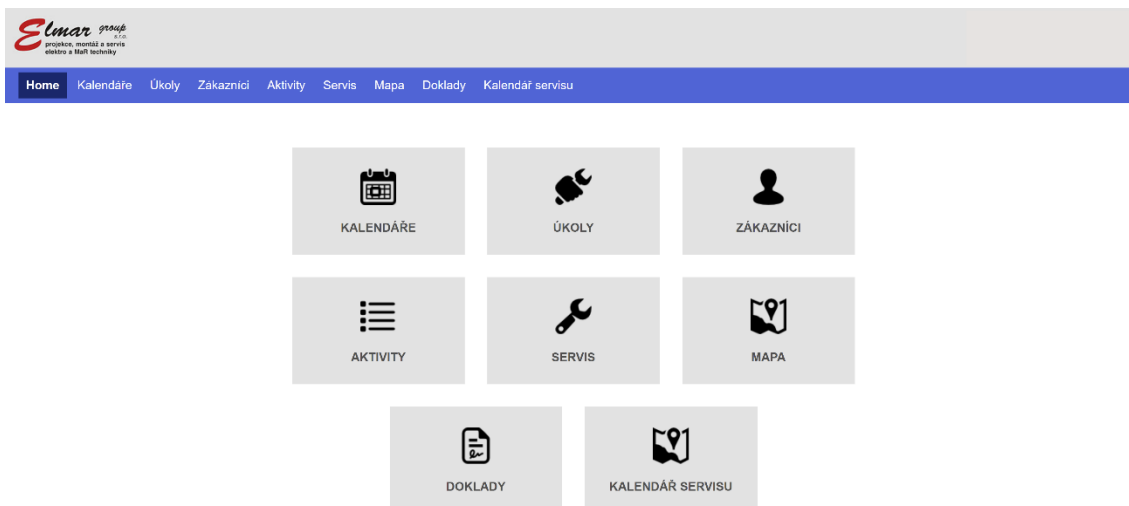
2.8.3 Additional web portal of the SAP Business One system

The company Elmar group spol. s r.o. was the first company in this field to cooperate with Versino s.r.o. to create a functional add-on to SAP Business One informational system.

The intention of this supplement was to simplify the work of the service team. Previously, all technicians had to write a paper report after the service and then enter it into the system in the office. Not only did this take a long time, but these services were also often billed late, as most technicians entered these protocols into the system at the last minute before the end of the month, and then the accountants were not able to bill all of the service protocols in time.

The new easy-to-access web portal has been collaboratively designed to give the service team an easy way to enter these protocols directly into the system, and make everything much clearer for the service team in this system add-on.

The system accessory was therefore designed for the service team to work with every part of the service they need. From entering the task to filling the protocol and signing the protocol by authorized person after completing the service.



Pic. 5: Web portal of Information System

Source: Own

3 Custom solutions

3.1 Innovation design

The new addition to the original information system enables, in addition to the classic entry of service protocols, also the programming of other functions according to the client's requirements. Thanks to this, it is also possible to facilitate the acceptance and allocation of orders.

In the part of entering the service protocol, we will insert a part of planning to make the company's management easier to award orders. The service team then only displays the assigned work in the system. We will also add a calendar for better orientation, which will clearly show when who should be on which order.

3.1.1 Step 1

The first step of entering a task for the service team is the same as the first step of entering a service protocol. The task submitter logs in to the web portal, opens the **Service Protocol** section and enters the first necessary information. The Contracting Authority fills in the **Customer** field from the list of customers added to the system and subsequently, thanks to this, other fields such as **Contact Person** and **Telephone** are filled in, according to the customer information added in the system.

Subsequently, the contracting authority fills in the fields **Service location**, **Project** according to which the order is named and lastly a very short description of the **Problem**, where the contracting authority describes the problem as described by the customer by phone or email.

Now all service technicians who enter the service report go through this first step, but once this innovation is fully operational, everyone except the company owner, service manager, head of the Brno branch or chief accountant will not have access to this first step. Thanks to this, we prevent mistakes like multiple service reports from multiple technicians for one service, just because of a bad agreement. Subsequently, these service messages must be complicatedly deleted.

The image shows a web form for creating a service protocol. It contains the following fields and controls:

- Číslo hlášení:** A text input field.
- Zákazník:** A text input field with a green checkmark icon on the right.
- Kontaktní osoba:** A text input field.
- Telefon:** A text input field.
- Místo:** A text input field.
- Projekt:** A dropdown menu.
- Stav:** A dropdown menu.
- Popis problému:** A text input field.
- Uložit servisní hlášení:** A button at the bottom left.

Pic. 6: Service Protocol

Source: Own

3.1.2 Step 2

After entering the first part of the service protocol, a solid base is created that can no longer be deleted. Subsequently, several other sections will appear, which may or may not be filled in. Now the only one of these parts that is in use is the **Activities** section, where service technicians outsource their work.

These parts include the already integrated part of **Planning**, but for the time being it has been compiled in such a way that it has been essentially unusable. The current plan is a complete reconstruction of this part.

In the second step of assigning orders, the contracting authority opens the already modified **Planning** section, clicks on the prepared **New task** button and enters some necessary information. The first and main information will be the name of the service technician to whom the task is assigned. Other necessary information is the place of service and the start time of the service. For greater efficiency, it will also be added the time of the expected end of the service, so that the service technicians do not unnecessarily delay due to other activities.

The last information in this step that needs to be filled in is the contact details. These will already be pre-filled according to the specified customer, but there will be a possible adjustment in case the contact person for the given service would be different from the contact person assigned to the customer.

Popis závady a řešení	▼
Všeobecně	▼
Práce a díly	▼
Činnosti	▼
Plánování	▼
Přílohy	▼

Uložit servisní hlášení

Pic. 7: Parts of Service Protocol

Source: Own

3.1.3 Step 3

The last step in the task assignment process is saving. However, saving leads to the display of this task in the newly created calendar. This calendar will be created in order to work more clearly with the whole system. The calendar will be divided according to the names of service technicians, to whom both scheduled tasks and already completed service activities will be assigned. Both of these assigned events will again be divided into different colors for easier orientation, as well as the names of the service technicians.

	neděle, 16. května	neděle, 16. května	neděle, 16. května	neděle, 16. května	neděle, 16. května	neděle, 16. května	neděle, 16. května	neděle, 16. května
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Pic. 8: System Calendar

Source: Own

3.2 Task assignors

The entire order allocation system will therefore work in such a way that the service team will no longer have access to create a service report, but only to enter the activity, ie the work performed, into the already created service report. Only the above-mentioned users, who are the owner of the company, the head of the service team, the head of the Brno branch of the company and the chief accountant, will have access to create a service report. The reason for granting access to these users is that these people accept service orders and manage the work of others in the team.

3.3 Timetable for implementing changes

Elmar group has already gone through one part of the implementation of functions in the web portal of the SAP Business One information system, where the basic part of the Service Protocol and the part of Activities were prepared, where information about the already performed service is inserted.

Thanks to previous experience in cooperation with the company Versino s.r.o. on a similar project, the firm Elmar group is able to create a timetable for the implementation of these innovations.

The estimated time taken to negotiate all modifications, implementation and testing is four months. The first three months are dedicated to negotiating all necessary adjustments, implementing these adjustments, and initial testing.

For the last month, selected employees of the Elmar group will focus on testing these implemented changes in practice. In this part, the system should be fully functional and testing is only used to catch the last minor bugs.

3.4 Financial plan

Again, thanks to previous cooperation with Versino, the Elmar group is able to estimate the cost of the entire project. The estimated total price of the system modifications should fit in the amount of CZK 100,000.

This price is divided into two main parts, namely implementation and subsequent modifications during testing. The first part, therefore the implementation, consists of the installation itself, user training and subsequent testing by Versino. The estimated price of this part is up to CZK 60,000.

The second part of the price is modifications during testing by Elmar group. These adjustments are calculated according to the hourly work of the Versino programmer. As we know from previous experience that a lot of subsequent adjustments will probably be needed, the estimated price of this part is up to CZK 40,000.

3.5 Order progress and implementation of system modifications

In this section, I will describe the entire future process of system modifications from the order to the last testing.

3.5.1 System order

The initial order and determination of requirements for new system modifications will take place in person. From Versino s.r.o. the owner of the company, who is also the main trader, will come. Together with the owner of the company Elmar group spol. s r.o. and one of the selected employees, who will then consult all the adjustments, will negotiate all the requirements of the Elmar group. This meeting will also clarify system modifications that are not possible or requirements that need to be modified according to the system's capabilities.

3.5.2 Implementation

Part of the implementation is mainly at Versino, but even in this part there is a consultation and clarification of adjustments with Elmar group. This consultation usually takes place over the phone. After the basic implementation of the modifications, Versino tests these changes and then an authorized person in the Elmar group checks them.

3.5.3 Control of modifications by Elmar group companies

As already mentioned, after implementation and initial testing by Versino, an authorized person from the Elmar group will check all implemented changes in the system. The so-

called Versino Helpdesk is used for all notes on further modifications and error corrections, through which it then communicates with various people assigned to individual tasks.

Thanks to this system, adjustments will also be accelerated, as both parties have only 7 days to respond to the other party. Therefore, the correction of errors on the part of Versino and the inspection on the part of Elmar group must be completed as soon as possible.

3.5.4 System testing

Once all the changes and innovations in the procurement system have been implemented, the system will have to be tested in practice in order to correct any errors that occurred during the creation and did not appear during the previous checks. In addition to the first test task, which will take place already in the modification control phase, it will be tested on real orders and services. The head of the service team in Prostějov and three service technicians will test this system.

During the test period, service technicians will still have access to create a service report in case an error occurs. However, the rule will apply that the first step in creating a service report is created only by the task submitter.

3.5.5 Final startup of the system

After complete testing of the system and correction of any errors that have occurred, the system is put into normal daily use. As already mentioned, once these changes have been implemented, access to all service technicians to create a service report will be denied. They will only have access to create an activity for the past service. At the same time, they will be able to check the entered tasks in the system according to the name in the calendar.

Therefore, only four of the already mentioned persons will be able to create service reports, namely the owner of the company, the head of the Brno branch, the head of the service team and the chief accountant. Planning will take place at weekly meetings, where the owner of the company will be assigned all the discussed tasks. Subsequent service

orders created during the week are already planned into the system by the head of the service team in Prostějov or the head of the Brno branch.

3.6 Suggestions for further system modifications

After introducing the necessary changes for the full functioning of the innovative way of awarding contracts, I propose a few more small innovations for even more efficient and user-friendly work with the system.

3.6.1 Sync with other calendars

To make it easier to use the new calendar in the system add-on, I suggest synchronizing the Versino calendar with other calendars on phones or computers such as Google Calendar or Apple Calendar.

Thanks to this synchronization, service technicians would be able to better organize their work and personal time. As the owner of the Elmar group prefers the work performed to the observance of working hours, employees have the opportunity to adjust some parts of the profession to a more suitable time for these employees.

3.6.2 Web portal of the system in a mobile environment

Another useful innovation would be the operation of the entire system in a mobile environment. When entering activities after the performed services, it is necessary to have the protocol signed by an authorized person on the given order. Now employees must use a signature board attached to the laptop. When using the web portal on a mobile or tablet, just a finger would be enough to sign the protocols.

3.6.3 GPS data

Another suggestion for improving the implemented changes is to connect data from the GPS of a laptop, tablet or phone. Thanks to this, the service location could be automatically pre-filled and at the same time in the future the service dispatcher could have a better overview of the current movement of employees at the services. Of course, the data in the GPS would be accessible to the dispatcher only when the system is running on a service technician's device.

3.7 Evaluation of proposed innovations

After the implementation of all these innovations, the whole process of assigning orders to individual technicians should be accelerated. Thanks to these innovations, the company avoids lengthy telephone consultations and possible misunderstandings when assigning a task due to the current several calls needed to arrange service time.

At the same time as the process is speeded up, the time organization of the company will also improve, as the tasks will be able to be assigned during the whole week and not only after a consultation at a weekly meeting.

Also, pre-scheduled service terminations will reduce the time that service technicians can spend on a single job, so they won't be able to delay by other activities.

Conclusion

The aim of this bachelor's thesis was to come up with a proposal for an innovative way of assigning orders to individual service technicians. The new method should ensure faster and more efficient assignment of tasks thanks to a supplement in the information system of Elmar group spol. s r.o. Innovations in this system will enable the planning of services without lengthy conversations with between several people from the person who answer the order on the phone, through owner of the company, head of service team to oindividual service technicians. It will thus enable a more efficient time organization of the entire service process.

I divided the bachelor thesis into three main parts, where I included all of the necessary information relating to the assignments and goals of the bachelor thesis.

In the first part, I focused on theoretical concepts such as innovation, its division, process and resources. I also described concept of company information systems and theoretical basic of analysis SLEPT, SWOT and Porter's analysis, which were used also in the second part of the bachelor thesis.

In the second part of the bachelor thesis, I focused on the analysis of the company in which the innovation is proposed. Here I described basic information about the company, its history and organizational structure. I also covered the current informational system of the company and its supplier. Subsequently, I prepared all the above-mentioned analyzes of the company and added a brief description of the current system of awarding orders to service technicians, where I pointed out their inefficient process.

In the last part of the bachelor's thesis, I described the proposal for the innovation of the method of assigning orders to service technicians and also the future steps of implementation of these changes. Among other things, I mentioned there the time and the financial plan of the entire innovation process. I also included other ideas for another additional innovations to make the informational system be more user friendly, more controled and a little bit more effective.

These changes in the system should lead to an easier and more efficient way of awarding contracts and at the same time to greater control over these contracts. It should also lead to a better time organization of the operation of the whole company and thus the

possibility of accepting more orders. This goal should be easier to achieve with help of the other ideas of innovations I came up with.

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