Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Management

DIPLOMA THESIS

INFLUENCE OF THE ENTERPRISE SYSTEM IMPLEMENTATION ON THE COMPANY'S MANAGEMENT AND FUNCTIONING, AND VICE VERSA.

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CZECH UNIVERSITY OF LIFE SCIENCES PRAGUE

Faculty of Economics and Management

DIPLOMA THESIS ASSIGNMENT

Bc. David Simbartl

Economics and Management

Thesis title

Influence of the enterprise system implementation on the company's management and functioning, and vice versa.

Objectives of thesis

The main objective of this diploma thesis is to find the challenges of the enterprise system implementation and how management copes with them. The aim of the theoretical part is to evaluate the implications to a company's management and functioning. The goal of the practical part is to analyse the process of implementation of enterprise system in selected companies (case studies).

The result of the analysis should be helpful to companies implementing the enterprise system to handle the difficulties better, be aware of the impact of analysed issues or omit the mentioned mistakes within the implementation.

Methodology

The theoretical part of the thesis is based on the literature review – academic and professional works, books, business articles, etc.). The practical section is elaborated as a comprehensive analysis of case studies – real life examples of selected companies implementing the enterprise system. The conclusion is formulated as a result of synthesis of both theoretical and practical outcome.

The proposed extent of the thesis

60 pages

Keywords

Enterprise system, management, influence of the implementation, implementation analysis, case studies, company functioning

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Recommended information sources

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STATUTORY DECLARATION

I declare that I have worked on my diploma thesis titled "INFLUENCE OF THE ENTERPRISE SYSTEM IMPLEMENTATION ON THE COMPANY'S MANAGEMENT AND FUNCTIONING, AND VICE VERSA." 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.

In Prague, ……..

David Simbartl

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I would like to thank to Ing. Richard Selby, Ph.D. for supervising my thesis. His valuable advice and comments contributed to the successful accomplishment of the thesis.

Influence of the enterprise system implementation on the company's management and functioning, and vice versa.

Abstract

The aim of this diploma thesis is to theoretically analyze the most common and important aspects that influence the enterprise system implementation. The analysis of influencing factors include their impact on both management and functionality of a company. Before the breakdown of the most important success factors in the implementation itself, the theoretical part also contains crucial info about the enterprise system as such.

Obtained theory is then applied on the real life case studies in the practical part, which reveals not only the degree of influence of the mentioned factors but also the attitude, capabilities and actions that a company and its management use to cope with them. Furthermore, the thesis is enriched with personal views and opinions gained during the author's professional experience in given area. As a result, the findings of the thesis should be helpful to any company in potential ES implementations.

Key words

Enterprise system, management, influence of the implementation, implementation analysis, case studies, company functioning

Vliv implementace podnikového informačního systému na management a chod firmy, a naopak.

Abstrakt

Cílem této diplomové práce je teoretická analýza nejčastějších a nejdůležitějších aspektů ovlivňujících implementaci podnikového informačního systému. Analýza ovlivňujících faktorů zahrnuje jejich dopad jak na management tak i chod firmy. Kromě samotného rozboru nejdůležitějších faktorů vedoucích k úspěšné implementaci systému, obsahuje teoretická část také zásadní informace o podnikovém informačním systému jako takovém.

Získaná teorie je následně aplikována na reálných případech v praktické části práce, která odhaluje nejen rozsah vlivu zmíněných faktorů, ale také přístup, schopnosti a počínání společnosti a jejího managementu, pomocí kterých se s těmito faktory vypořádává. Práce je také navíc obohacena osobními pohledy a názory získaných během autorova profesního působení v dané oblasti. Závěrečný výsledek a zjištění práce by měly být přínosné jakékoli společnosti při potenciální implementaci podnikového informačního systému.

Klíčová slova

Podnikový informační systém, management, vliv implementace, analýza implementace, případové studie, chod podniku

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1 Introduction

The implementation of the enterprise system is a huge step for every company that decides to chase the wanted outcomes through such a technological development. The whole process of implementation is a very complex issue, affecting basically all areas and people in the company – ranging from the top management to the lowest-level employees of the hierarchical pyramid.

The name of the thesis contains the term enterprise system (ES); however, this work is aimed mainly on the enterprise resource planning (ERP) system implication. The enterprise system concept is superset of the partial systems such as ERP, CRM or SCM, nevertheless, the most complex and risky implementation lies in the ERP. The term ES is used on purpose since other particular systems are very closely connected to each other and, of course, are mentioned in the thesis too. Secondly, the professional experience of the author of this work is being currently gained in an ERP implementation. His up to now gathered knowledge in this area the supports the more general point of view on the whole implementation process and therefore the term ES is used in the name of the thesis.

The theoretical part analyses the theory of the ERP implementation, its background, and processes. The major objective is to break down the critical success factors (CSFs) of the implementation - its risks, benefits, barriers, threats, advantages or disadvantages. The theory of the CSFs is taken from one of the best researchers in this area such as Adel M. Aladwani or Thomas Davenport. The theory also covers detailed views on both top management, and the project management. The overall results reveal the extent and relevance of several most important factors influencing the ERP implementation.

The practical part of the thesis basically applies the theoretical findings from the previous part on the real case studies and tries to analyze whether the reality reflects the theory. The next aim of the practical section is to find out what companies did well during the ERP implementation but more importantly, what they did wrong. Based on the theory, the wrong steps are detected, assigned to the responsible subject and consequently a correct scenario is suggested. Eventually, the practical section should cover several most common and crucial factors influencing the ERP implementation that happened in past in existing companies.

In addition, the thesis contains author's personal views and perceptions based on his professional experience in ERP implementation. His work experience in this area is currently being gained in Deloitte Technology Advisory team, which is working on a project for a major German car manufacturer. These insights can be considered as valuable complements to both, theory and analyzed case studies. To certain extent, personal experience and perception are also compared to the mentioned real business situations.

Last but not least, the thesis also put an emphasis on the phase after the ERP implementation which cannot be underestimated to maintain the high of the system efficacy. This process is closely connected with the implementation itself since it affects immensely the quality of the contribution to the company.

2 Thesis Objectives and Methodology

2.1 Objectives

The aim of the theoretical section is to find, evaluate and analyse the crucial challenges in the implementation of the enterprise system – more particularly, in the Enterprise Resource Planning system. Consequently, the thesis looks at the attitude and actions how a company and its management should correctly cope with the analyzed success factors to reach the desired outcome. Furthermore, the aim of the analysis shall cover activities of both top management and project management, and the relationship between them. The general objective of this section is to provide a solid theoretical background for accurate breakdown of the following case studies in practice.

The practical part works with the past ERP implementations that were carried out in selected companies. The main aim is to reveal whether the implementation of the system were successful or not, analyze the processes and steps taken and evaluate both the issues and problems on one side, and positive actions on the other side. The final result should be useful for any ERP implementation, valid generally for any company.

2.2 Methodology

The theoretical section is based on the literature review of the selected academic or professional works, books or business articles analyzing the ERP implementation, its success factors, risks, barriers, advantages or impacts. It elaborates in detail on the most important influencing factors.

The practical part is a comprehensive analysis of the real life case studies. The analysis of the cases is framed with the theory obtained in the first section. The processes, management activities and decisions are evaluated. The bad decisions are emphasized and possible correct decisions are suggested that would have led to a different and better outcome. The conclusion is formulated as a result of synthesis of both theoretical and practical outcome.

3 Theoretical section

3.1 Enterprise System vs. Enterprise Resource Planning

It may seem that terms enterprise system (ES) and enterprise resource planning (ERP) are same and interchangeable things. Nevertheless, there is a difference between them and, therefore, it is necessary to briefly explain them in order to fully understand the purpose of this thesis. ES is basically a superset of various enterprise applications that have diverse purposes in a company. Among these applications could be included primarily ERP, SCM (Supply-Chain-Management), or CRM (Customer-Relationship-Management).

The ERP is utilized for the improvement of the internal functions of an organization. This system contains all modules of the enterprise and interrelate the processes in order the information among them could be in real time, accurate and quickly transferred. The purpose of the ERP software is to monitor the internal processes and make them more efficient, moreover, to simplify decision making through provided reports in unified format to management. On the other hand, the Enterprise system works with the actions connected with subjects like suppliers or buyers (SCM, CRM), similarly to the ERP, these systems help the management in other decision making processes – e.g. in marketing, whom to deal with, where to buy raw materials or how to maintain a desired interest of customers.

An example in praxis illustrates the difference between ERP and ES best. An ERP starts to work when the order comes, from that moment, an ERP tracks all the activities until the goods are made and shipped – check the raw materials, help with production, create an invoice, etc.. The ES (the other applications beside an ERP) is active beyond the ERP. It chooses the vendors and suppliers according to which one offers the best conditions, it supports the management with entering new markets or how to compete with the competition. In spite of the differences, an implementations is a crucial process. Bad implementation may cause heavy losses, however, a proper one can turn into a great tool to grow business.

In short, in this work, the ES stands for the enterprise applications that includes the ERP, which undoubtedly very closely relates with the other components of the enterprise system. Although the thesis is focused on the ERP implementation, the name contains rather the

superset term - enterprise system. The reason is to provide a wider perception range of the information systems used in enterprises and how they relate among each other (Filinovich, 2012).

3.2 What is ERP

A range of the software applications focused on the information flow through a company was a result of the development and innovations in information technology in 1990s. This commercial software set is called Enterprise system. During those years, some of the largest enterprises in the world were attracted by one enterprise system in particular – it was an ERP system. The estimations say that enterprises all around the world were spending roughly 10 billion USD per year on ERP software during this period (Yusuf, Gunasekaran & Abthorpe, 2004).

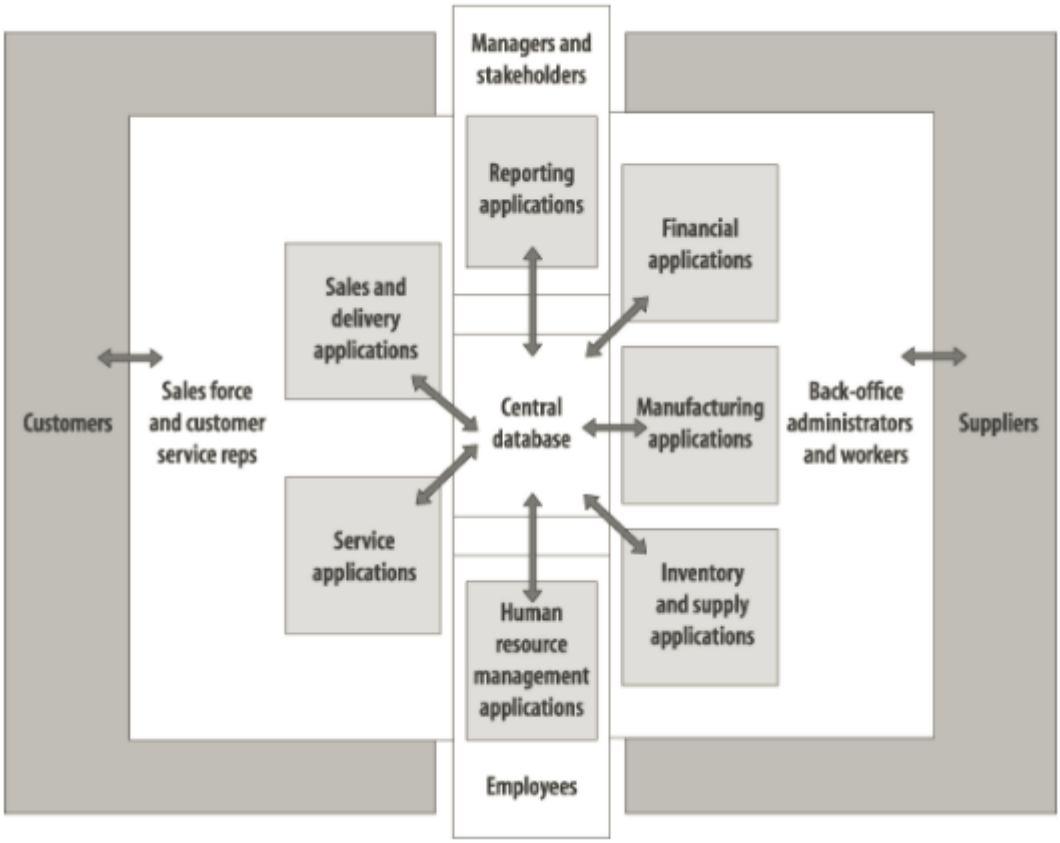
ERP was developed primarily to overcome the imperfection of MRPII (Manufacturing resource planning). The ERP is a system supporting the most efficient, profitable and productive managing and planning of the company's resources. The difference in comparison to MRP structure, ERP is able to connect all parts of the business and provide a synchronized configuration among them. This ability allows a company to get competitive advantage through prompt responses to fast changing business environment, for instance by production optimization or saving resources. ERP is supposed to handle all possible inefficiencies regarding the data entry and data transport, which are common in departmentalized processes. The system also enables a communication and data transfers between various structures in real time, which was not possible with previous systems. Nowadays, when the product life cycles became shorter, the efficient utilization of the resources usually turn up to be a great investment (Barker & Frolick, 2003).

ERP enables a management of all individual integrated functional systems in a company, which are called modules. Among these modules that are covered in ERP belong e.g. finance, logistics, manufacturing or procurement. A company does not have to utilize systems for each module from the same provider, that is why the systems cannot communicate very well. The ERP can replace all those existing separate systems and standardize the flow of data and information. From the functional point of view, the system captures valuable data via a relational database management system. The crucial principle

of this process is that the data is entered from the modular applications just once and as soon as it is stored, the data runs an update of all related information throughout the whole system. Important feature is that the system can carry out an update and virtual support of all organizational areas, all business units, departments and plants (Yusuf, Gunasekaran & Abthorpe, 2004).

Following figure illustrates how ERP works:

Figure 1 - ERP framework



Source: DAVENPORT, Thomas. (1998). Putting the Enterprise into the Enterprise System, Harvard Business Review, July-Aug.

There is no doubt that an ERP implementation is very complex and difficult process, however, many organizations, which accomplished the implementation successfully, confirm that there are many benefits to offer. Barker's and Frolick's study states that ERP was part of the approximately 70% of the Fortune 1000 companies. Nevertheless, the software is not limited only to huge corporations. Organizations of all sizes seek ERP implementation in order to remove the barriers among departments that cause inefficient

communication as well as to focus on business procedures helping to reach a required strategic position (Barker & Frolick, 2003).

3.2.1 Providers and Products

Similarly to any other segment in the IT industry, also ERP is evolving very quickly. The market of ERP clearly distinguishes between the two sectors – large enterprises, and small and medium businesses. The second named sector is experiencing faster growth since new players are coming to the market.

Basically, the market is classified into Tier I,II or III, depending on the size, complexity and solutions that the company seeks. Tier I covers huge enterprises reaching revenues over $1 billion. Tier I ERP products are logically connected with high costs caused by the complexity, implementation, and support. Due to these facts, there are, in fact, only two vendors for the Tier I category – SAP and Oracle (Top 10 Enterprise Resource Planning Vendors, 2018).

Tier II segment requires ERP software suitable for mid-sized organizations with revenue ranging between $50 million and $1 billion. Tier II products are often focused on a specific industry and single or just a few locations of deployment. Naturally, Tier II solutions are cheaper and less demanding to manage and support. There is a significant competition comprising roughly 20 companies (Top 10 Enterprise Resource Planning Vendors, 2018).

Tier III ERP vendors aim at companies with revenues from $10 million to $50 million. These ERP solutions have usually low costs and they are simple to implement and support. When a company choses a Tier III product, it must be aware of the risk that the organization may soon outgrow the solution due to a rapid growth, which is often related to small businesses. For the Tier III solutions, there are more vendors on the market, also operating just on a national level (Top 10 Enterprise Resource Planning Vendors, 2018).

There is a wide range of factors influencing a suitable choice of a particular product from a particular provider. For instance, a company must decide whether to implement a On-premise or Cloud based software. Each of these two variants has own pros and cons. On-premise solution is selected mainly because of the more predictable performance, ensuring the connectivity with legacy system or leveraging the existing systems. On the other hand, a cloud based system is favored when a company requires rapid deployment, lower initial costs

or it has only little IT staff to manage ERP. It is being said, that SAP overslept the development of cloud based solution products, and therefore limp behind its competitor (Oracle) in this area (Top 10 Enterprise Resource Planning Vendors, 2018).

Since ERP is very specialized field, its software solutions need to be differentiated by sectors. Each sector has its own list of main providers, however, some of the players are common to all main sectors of industry:

- Manufacturing & distribution industry
- Transport, communication, energy, sanitary services
- Service sector
- Retail sector

The above mentioned sectors are covered from more than 50% by three dominating providers: SAP (30%), Oracle (20%), and Microsoft (15%). The percentage share varies in different sectors; in some of them, the coverage by those three vendors reaches even 75%. The following table illustrates the remaining vendors of the top 10 list; nevertheless, many of them do not have a significant share of products on the market (Top 10 Enterprise Resource Planning Vendors, 2018):

Figure 2 - Top ERP providers

1	SAP
2	Oracle
3	Microsoft
4	Infor
5	Epicor
6	Lawson
7	QAD
8	SAGE
9	IFS
10	Consona Corp.

Source: Top 10 Enterprise Resource Planning (ERP) Vendors. (2018). Retrieved on 28/01/18 from https://www.enterpriseinnovation.net/files/whitepapers/top_10_erp_vendors.pdf

3.2.2 SAP

Not only is SAP the leader among enterprise system providers worldwide, particularly in ERP software, but also author of the thesis is currently employed in a consulting company that implements SAP solutions for its clients, which is why this software is closely related to his daily work. Based on these two facts, this chapter elaborates a little bit more on the SAP, such as its history, products or customers.

SAP SE (in German the abbreviation means Systeme, Anwendungen und Produkte in der Datenverarbeitung; which is in English translation: Systems, Applications & Products in Data Processing) is a software corporation which develops and sells enterprise systems. As mentioned above, SAP is an undisputed leader in the ERP market and the third largest software company in the world. SAP was established in 1972 by 5 IBM engineers. After they were told to abandon the project based on enterprise-wide system (a predecessor of SAP software), they decided to leave the company and continue on working on this software. Since then, SAP grew into a crucial player in software industry. It employs more than 80.000 people and has reached over €20 billion milestone in revenues in last years. SAP became a public traded company already in 1988; today it is included in the Dow Jones STOXX 50. Among the most important people belong currently the CEO Bill McDermot and Chairman Hasso Plattner (About SAP SE, 2018).

The first commercial product was launched in 1973 and was called SAP R/98. It offered a system for multiple tasks and centralized the data storage, which improved the data maintenance. For this purposes, from the technical point of view a creation of database was crucial. In a horizon of roughly 25 years from that time, SAP launched followers of this software – SAP R/2 and SAP R/3 and their several versions. The capabilities of the system spread into other areas such as managerial management or production planning. After the progress in internet development SAP moved from the computing mainframe towards the client/server architectures. The integration via internet caused that SAP redesigned its concept of business processes, resulting in replacement of R/3 with SAP ERP Central Component in 2004. The most recent version of SAP ERP was released in 2016 (Portfolio Categories, 2018).

SAP ERP software incorporates the key business functions of an organization. It includes a wide range of business processes such as (Portfolio Categories, 2018):

- Operations – Sales & Distribution, Materials Management, Production Planning, Logistics and Quality Management
- Financials – Accounting, Financial Supply Chain Management
- Human Capital Management – Training, Payroll, e-Recruiting
- Corporate Services – Travel Management, Environment, Health and Safety

To categorize SAP to the Tiers described in the previous chapter, SAP is a number one in Tier I ERP segment, in other words, its crucial customers are large corporations. In contrast, SAP has been criticized for being user-unfriendly, too complex and very difficult to handle. An ERP system by SAP is generally not suitable for small or medium companies, since it offers more than an organization of this size needs. However, it does not mean that SAP sells products for Tier I enterprises only. Besides the ERP, there are many software solutions for SMEs in offer as well (Top 10 Enterprise Resource Planning Vendors, 2018).

3.2.3 Pros and Cons of the ERP

Apart from the technical and operational advantages that are mentioned in the previous chapter, ERP has also several other benefits. The system can strengthen satisfaction of the employees since it removes number of boring and redundant activities that otherwise need to be done by people on daily basis. Thanks to this fact, workers gain time for more value-added duties, which ought to bring a more satisfying and fulfilling work for employees. More decision making power could be moved on the people and consequently, after a suitable trainings, they should make those decisions without a close scrutiny of their supervisors. Without having to do a boring, routine job, employees are more likely to be happy at work and keep the position they have. Eventually, they could become more experienced, which means they would be a more valuable asset to the organization because the knowledge and experience of workers help a company to have better competitive advantage through lower training and employee turnover costs. Besides providing the decision tools for sales or marketing in real-time, ERP also aims at less compatible departments like logistics, accounting, or production, and increases the efficiency of data sharing. A better transaction processing then causes better decision making. The smooth transfer of critical data provides the company with many tangible or intangible advantages. To name at least few of them, an organization can decrease cycle times for financial closings, or streamline the reporting and supply chain issues. All the improvements described above lead to better business

environment of a company. Of course, the impulse to implement ERP varies, the common purpose remains in required business improvement (Barker & Frolick, 2003).

On the other hand, ERP has, of course, its disadvantages too. Nevertheless, the truth is that most issues and cons are connected with the implementation of the ERP or organization itself, not directly with the system and its functions. Therefore, these pitfalls can be usually avoided. The whole process of the implementation must be properly planned and organized to succeed. Since the core of the thesis is based on the aspects influencing the implementation of the ERP, the detailed analysis and description of threats and problems is elaborated in next chapters. To illustrate a general view on the possible issues of the ERP, there could be mentioned several factors. On the top of the list stands an overall commitment to the project, in fact, a thorough understanding off all factors and processes that is supposed to be undertaken. Right at the beginning of the implementation, a very dangerous mistake can occur. That is when the company tries "to fit a square peg into a round hole". In other words, a management can think that the ERP system needs to be customized and adjusted according to the processes and functions of the company. In order that the implementation is successful, an enterprise has to modify its processes, and not try to modify the system to fit the company. It is true that some changes and modifications are possible to do, the general purpose of the ERP works better when as few changes as possible are made to the original software. Next major disadvantages, or better to say threats, which relate again to the implementation itself, can be for instance an attitude of the management towards the employees. People working in a company have to be treated as if they have the same importance and are equally valuable for an organization as the software. If they are not, workers lose the trust in their employer, they can start thinking they are not that useful anymore and eventually may be dismissed. ERP software itself is worthless without people to work with it, implement it, and keep its functionality. As a result, a small ignorance of a management might lead to a huge issue regarding the most valuable asset of an organization – its employees (Barker & Frolick, 2003).

3.3 Criteria assessment of the ES

Before the implementation of the ES/ERP itself, it is necessary for the company to assess the criteria, or in other words, the evaluation of the investment into the IT. This initial planning and analysis cannot be underestimated, since it is, in fact, a foundation for the whole

implementation process and usage of the ES in the future. A crucial step in assessing the criteria is to have clear answers to the list of Cameron & Whetten's 7 questions on organizational measurement of effectiveness. The research of the Shari Shang & Peter Seddon (2002) elaborated on these questions and found the correct answers that are necessary for measuring organizational performance, and therefore stating, whether the investment into the ES is a wise decision. The questions are listed below; the answers are then explained in following paragraph (Shang & Seddon, 2002).

Table 1 - Measuring organizational performance

Questions for measuring organizational performance	Answers for evaluating investment in ES
1. *From whose perspective is effectiveness being judged?*	*Business managers*
2. *What is the domain of activity?*	*Enterprise system*
3. *What is the level of analysis?*	*Both organizational and functional*
4. *What is the purpose of evaluation?*	*Planning, management and improvement*
5. *What time frame is employed?*	*Years after the enterprise system goes live*
6. *What types of data are to be used?*	*Objective and perceptual*
7. *Against which referent is effectiveness to be judged?*	*Stated goals of the organization, i.e. the business case, past performance of the organization*

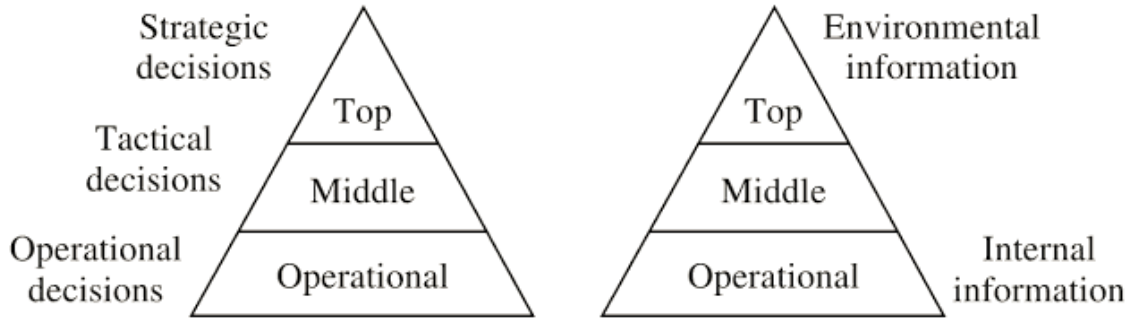
Source: SHANG, S., & SEDDON, P. B. (2002). Assessing and managing the benefits of enterprise systems: the business manager's perspective. Information systems journal

To be able to explain and analyze the answer for the first question, it is important to understand the Anthony's organizational pyramid illustrating the three-level management.

Anthony's classifications differentiates three levels of managerial decision-making. Generally, strategic planning management, which is the highest managerial level, usually consists of just a few people, however, that does not mean that this kind of decision-making is done solely by the top management, nevertheless, it is strongly engaged. A bit larger group of people is involved in the tactical decisions, those are usually the senior managers. The

operational decisions are undertaken by the largest group of staff out of the three levels. Based on the decision-making competences, the framework is visually stacked in the Anthony's organizational pyramid, showing the strategic, tactical and operational level (the left pyramid). Each level requires different types of information to be able to carry out the best decisions. The information range from internal, for the operational managers, to environmental, used for the strategic planning (the right pyramid) (Sadagopan, 2014).

Figure 3 - Anthony's pyramid



Source: SADAGOPAN, S. (2014). Management information systems. PHI Learning Pvt. Ltd.

As can be seen in the Figure 1, the quantity of information decreases on the way up the pyramid, in contrast, the quality of the information is demanded to be higher and higher as we move up the pyramid. This flow and reduction of information represents an information filter, which is very important for any information system design. The older generations of the systems simply failed due to their inability to differentiate quantity and value of information being forwarded to a higher level in the decision-making pyramid. The top management had not enough time nor willingness to handle lots of data connected e.g. with operations. Nowadays, there are still plenty of departments in both public and private sector, which mistakenly think that successful management information system should provide a load of detailed information so that every possible question could be answered based on the huge amount of data. The departments then fail to notice the process of collecting a large scale of data consumes the valuable time, which could be spent on analysis instead (Sadagopan, 2014).

Going back to answer the first question from the measuring organizational performance list *'From whose perspective is effectiveness being judged?'*. Generally, one can say that the effectiveness is judged, of course, by people from wide range form low to top management, however, some managers have more and better competencies to do that than others - the answer lies right in the middle of the Anthony's pyramid. He describes the tactical decisions as 'management control' done by the middle-level managers, which he calls business managers. These managers have a combination of great knowledge of operational processes and detailed comprehension of strategic plans. In other words, they manage the connection between business strategy and business operation. The higher importance of the business managers in organizational performance measuring than the chief executives' or operational managers' is not accidental. According to the Anthony's three-stage pyramid, the strategic decision-makers are more focused on the financial performance of the IT improvements. At this senior management level, there is also a significant causality in the evaluation of the IT investment, since it cannot be proved that the investment into enterprise system directly causes the changes in sales, profitability or market share. The opposite end of the pyramid - the operational managers – are rather into the system aspects like quality of the information, e.g. whether the data is accurate, on time, easy to use, etc. In case the evaluation whether to implement the ES would be done by this sort of management, it would be strongly connected only with the functions of the ES/ERP they interact or are familiar with. This perception is, however, based only on needs of individuals and not on the needs and goals of the whole organization such as cost saving, productivity improvement, or customer service improvement (Shang & Seddon, 2002).

Since the perspective of strategic management is too broad to see the factual benefits of enterprise system investment and, on the other hand, the view of operational managers is too narrow to take into account all relevant goals of the company, the research made by Shang & Sheddon states that business management (middle managers) is the most appropriate managerial level for the evaluation. Business managers understand the connection between the capabilities of the system and how it may be utilized to reach business plans (Shang & Seddon, 2002).

The second and third questions clarifies the domain of activity, which is naturally the organization's enterprise system, and the level of analysis evaluation. The answers for the

level of analysis is both organizational and functional level. To illustrate the logic of the answer, it is needed to elaborate on this statement. The requirement to do an analysis on both these levels is based on the fact that some aspect of the ES and its benefits are assessed on the organizational level – such as organizational benefits. Others, such as operational advantages, are evaluated in functional departments. To give an example, a company's logistics module may need different implementation and different way of usage than its financial module. As the benefits of different module functions varies, they must be, therefore, evaluated as separate modules, in other words, they need organizational and functional analysis (Shang & Seddon, 2002).

Questions 4 and 5 do not need any further explanation. Besides others, the assessment of the ES is logically supposed to improve the management and planning. The usage and functionality of the ES is a matter for a longer term, the evaluation goes on during the years after the system go-live (Shang & Seddon, 2002).

More important is to justify the answer for sixth question. Restriction of the analysis only to, for instance, financial analysis would be a short-sighted decision. Many ES advantages cannot be measured quantitatively due to their abstractness and intangibility. To assess the benefits, it is important to include both perceptual and objective data to the evaluation.[7]

Generally, the question 'Against which referent is effectiveness to be judged?' has three possible outcomes. Firstly, the ES could be compared with the business plan for the investment some years after the implementation and use 'stated goals of the company' as the referent. Secondly, 'other organization' may be used for a comparison and thirdly, 'some ideal performance' can be set as a target and then compared with the reality (Shang & Seddon, 2002).

3.4 Critical Success Factors of the Implementation

In this a bit extensive chapter, the critical success factors (CSFs) of the ES implementation are elaborated. Those factors can be seen as challenges that accompany the whole implementation process from the very beginning to its go-live and even further. The list of the challenges analyzed in this part is just a simplified selection of the most important and the most influential ones. Nevertheless, the angle of view on the mentioned CSFs is taken as widely as possible. It covers factors related to the technical matters, issues connected with

various levels of management including the project management, attitudes towards the employees and so on. The subchapters elaborate on a couple of the aspects that has the broadest spread of influence on the successful implementation and, therefore, they are explained more in detail. The various sources of studies looking into the CSFs cause the diverse view on several selected challenges in this work.

A study carried out already in 1981 by Bullen and Rockart revealed the CSFs in an IT system implementation that are necessary for management of a company to achieve a desired results. In order to reach this aim, the scarcest resource of the management has to be devoted to CSFs that make difference between success and failure. The success of the ERP implementation depends usually on various factors, starting already with the planning of the investment into ERP and ending with the running and using the system by the users. Those factors include e.g. the firm's choice of an application system that fits company's needs, the analysis of the project, level of data integration, or user participation involvement. Due to the complexity of the ERP and wide range of people, departments and organizational processes involved, the CSFs for ERP differ from other information system projects. Since the mentioned year 1981, there has been conducted many researches, surveys, case studies or literature reviews that work with the factors influencing the results of ERP projects. The conclusion of those researches defines the following list of most crucial CSFs related with the ERP. Nevertheless, the order does not represent their significance (Al-Sabaawi, 2015).

Table 2 - Critical Success Factors

Success Factors	Chapter Reference
Departments (Stakeholder) Participation	*Chapter 3.4.1 Stakeholder Assessment and Management*
Commitment and Support of Top Management	
Change Management	*Chapter 3.4.2 Change Management*
Communication	
User Training and Education	
Business Plan and Vision	*Chapter 3.4.3 Project Management Chapter 3.4.1 Stakeholder Assessment and Management*
Project Management	
Technological challenges and infrastructure	*Chapter 3.4.4 Technological challenges*

Source: AL-SABAAWI, M. Y. M. (2015). Critical success factors for enterprise resource planning implementation success. International Journal of Advances in Engineering & Technology, 8(4), 496.

As the factors stated in the table above are strongly interconnected, the column 'Chapter Reference' refers to the subchapter, in which is the given factor analyzed. Some of the factors are categorized under one common subchapter, as they have same or very similar attributes, influencers or functionalities. Particular subchapters try to break down the essence of the particular success factor, its components (who/what is affecting/affected), the possible negative or positive outcomes and, last but not least, they illustrate the way and attitude how to cope with these CSFs in order to obtain a required result. Furthermore, it is very important to emphasize that the influence between any kind of management and a success factor is a two-way street. In other words, the factors influence vastly the functioning of an organization

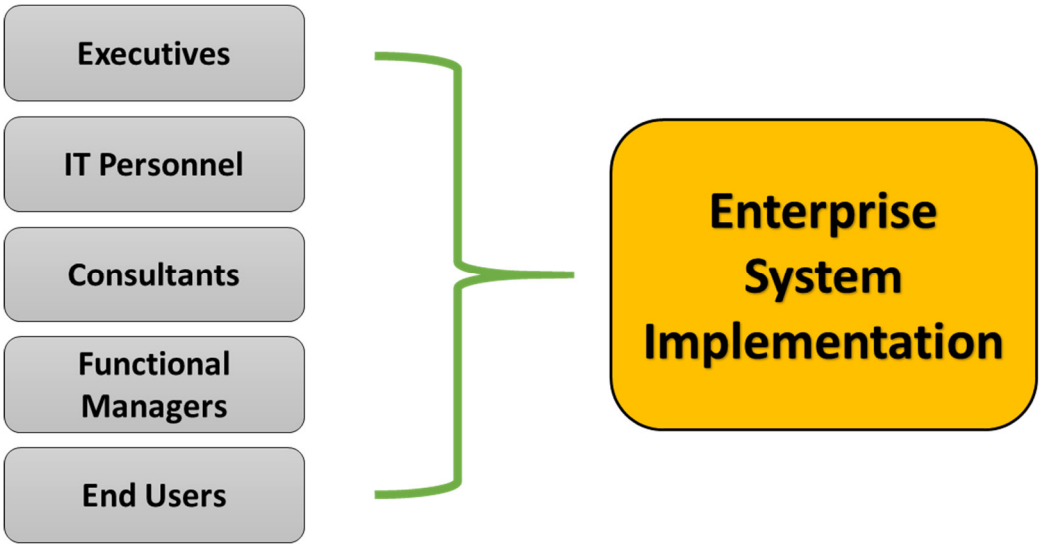
but at the same time, the outcome of factors depends only on actions and decisions done by people in a company – in most cases by management.

3.4.1 Stakeholder Assessment and Management

This subchapter develops a broader analysis of the first three success factors from the table shown in the previous chapter. A range of stakeholders affecting the implementation is taken into consideration; therefore, the attitude of the top management can be included here too.

Firstly, the term stakeholder has to be clarified. Based on various researches from the past, the research from the Ryerson University summarizes the definition of stakeholder as 'any group or individual who can affect or is affected by the achievement of the organization's objectives'. Stakeholders might be then categorized based on their power, urgency and legitimacy. Of course, each stakeholder has different importance of influence, however, they have often also different interests and that is why they do not have to always agree on common objectives. The complexity of ERP involve many stakeholders from executive level to line employees. Each type of stakeholder engagement should be taken into account, as well as its role in the ERP implementation project. The goal of the assessment is to clarify the core of different perceptions of different stakeholders in a company. For this reason, assessment of stakeholders' influence, importance, and level of impact is important for managing the implementation more effectively. A suitable engagement of stakeholders is needed to maintain sustainability, otherwise they might be resistant to change and the benefits of ERP could not be realized. The solution for the resistance is covered in the chapter 'Change Management'. Some researcher in past mistakenly emphasize mainly the executives or IT department as major influencers and omit the holistic view on other stakeholders. Controlling stakeholders' positive perception of implementation stands in providing them with appropriate information so that they have clear expectations. To reach this aim, it is necessary to understand particular group of stakeholders, since different strategies can work for different stakeholders. Being aware of the variety of shareholder management strategies, how and when to use them help to reach a successful implementation. The groups of shareholders is illustrated here (Mclaren & Jariri, 2012).

Figure 4 - Stakeholder Involvement



Source: McLaren, T. S., & Jariri, I. (2012). Stakeholder Assessment and Management for Enterprise Systems Implementation Projects. In CONF-IRM (p. 68).

Understanding and evaluation of different interests, influences and perceptions help to proactively keep low negative impacts on people with low influence and power. It is crucial to assess the stakeholder influence in very early stage of the project to identify potential risks, but also opportunities and strategies for stakeholder engagement. The following table summarizes the roles, influence, expectations and issues of the stakeholders. Consequently, a detailed analysis of the assessment is provided for each group of stakeholders (Mclaren & Jariri, 2012).

Table 3 - Stakeholder Assessment

Stakeholder	Role	Influence	Expectations	Issues
Executives	▪ Approve funding and resources for the project ▪ Provide support, commitment to resources and change management ▪ Ensure all the right stakeholders have been engaged	Highest influence and power with the organization	▪ Timely and successful completion of ES implementation ▪ Increased profits and lower costs ▪ Becoming one integrated company	▪ Lack of commitment and support ▪ Downplay change management ▪ Strong presence in beginning stages but later become dormant
IT Personnel	▪ Provide technical support ▪ Work with consultants to successfully integrate the system within the organization	Low influence and power with the organization	Abandonment of many local systems and decentralized IT groups; in turn creating a strong centralized IT department	▪ Lack of co-operation from other stakeholders on the business side ▪ Lack of involvement in decision making process
Consultants	▪ Work with internal stakeholders to understand requirements and business processes ▪ Provide system, documentation, training and change management support ▪ Successful implementation of the ES system	High influence and power with the organization	▪ Timely and successful completion of ES implementation within the customer organization ▪ Co-operation and support of internal stakeholders	▪ Lack of co-operation from internal stakeholders ▪ Obtaining reliable and accurate information from employees
Functional Managers	▪ Signoff on requirements and business processes ▪ Identify SMEs to be involved in ES implementation ▪ Ensure all the right stakeholders have been engaged	Medium to High influence and power with the organization	▪ Provide employees with integrated, real-time, accurate and reliable information ▪ Streamlined processes	▪ Might see the system as a threat ▪ Lack of involvement in the implementation and change management process
End Users	▪ Provide business process knowledge and expertise ▪ Clearly communicate business requirements to IT and consultants	Low influence and power with the organization	▪ System that provides integrated, real-time, accurate and reliable information ▪ Solve business problems	▪ Lack of involvement in the decision making process ▪ Balance operational requirements with ES implementation support

Source: McLaren, T. S., & Jariri, I. (2012). Stakeholder Assessment and Management for Enterprise Systems Implementation Projects. In CONF-IRM (p. 68).

The executives of a company are in charge of the financing the implementation project. Furthermore, they make sure the project match with the strategic plans of an organization. Executives have, therefore, the highest influence in the initial phase of the project. On the other hand, the top management requires fast results that positively affect the company, which usually causes the lack of commitment and support for change management (Mclaren & Jariri, 2012).

IT department is the key stakeholder as for the technological point of view. It is responsible for linking the ES modules to existing systems and data sources, which are called legacy systems. IT people must be seen as strategic partners; however, they have low power to influence the project. If the internal IT team is not seen as strategic stakeholder and lacks the technical skills, the top management contracts external consultants who are specialized in this area.

The main objective of consultants is to implement software successfully, on which depend their financial reward, as well as their reputation. The image on the marketplace is important for consultants for their upcoming projects. A great issue related with the consulting work is that they do not obtain accurate and reliable information form employees.

The functional managers may have high influence on the implementation process. They are usually more open to the change caused by the implementation than their employees are. Their attitude is highly influenced by their involvement in the whole process.

The end users are essential both during the process and after the go-live. They provide IT and consultants with business process knowledge. Users desire the new system would handle the data and information better than the old system. They need to be informed properly about the process and consequences of the new system; since they may feel threatened that the system can take away their responsibilities and activities. On the other hand, when they are resistant to change, the successful implementation can be endangered (Mclaren & Jariri, 2012).

After the assessment of the stakeholders is analyzed, there is a next step, which is the management of stakeholders. The identification of diverse influence helps to find the best management strategy in order to control possible conflicts among stakeholders. During the project, each stakeholder can have different issues, expectations and interest for various reasons, e.g. political or personal. These mismatches in people's perception can lead to conflicts, therefore, the management has to assure that stakeholders work closely together, they are coordinated, well informed and have strong relationships with each other. If the mentioned criteria are not managed appropriately among people, the project may be abandoned. Because of this, management has a great responsibility to ensure that stakeholders are headed to the common goal. The primary aim of the ES is to integrate functions of an organization, which is why the management needs to build an awareness to employees. In other words, communicating all qualities and characteristics of the enterprise system is essential. Within the efficient communication belong for instance also the awareness of the project plan, scope, objectives, activities or updates. Collecting the feedback from the employees is no less important. From the theoretical point of view, this kind of management is better to frame to the chapter 'Change management'. Unfortunately, education and trainings that can be classified as communication are often the first item where

the budget is cut. Therefore, this aspect is important for management to focus on and provide it with sufficient funding (Mclaren & Jariri, 2012).

The following table, similarly to the previous one, summarizes the stakeholder issues and consequently recommended management strategies how to handle them:

Table 4 - Stakeholder Management

Stakeholder	Issues	Stakeholder Management Strategies
Executives	▪ Lack of commitment and support ▪ Downplay change management ▪ Strong presence in beginning stages but later become dormant	▪ Senior management should acknowledge and actively monitor and support the concerns of all legitimate stakeholders ▪ Acknowledge that ES implementations are a major change requiring proper change management ▪ Maintain a strong presence throughout the implementation of the system ▪ Acknowledge the potential conflicts that could occur between stakeholders and work to create alignment between them ▪ Openly communicate with all stakeholders to create alignment on objectives
IT Personnel	▪ Lack of co-operation from other stakeholders on the business side ▪ Lack of involvement in the decision making process	▪ Building relationships to establish understanding, trust, and cooperation among the business users. ▪ Clearly and openly communicate with stakeholders ▪ Escalate any foreseeable issues to senior management
Consultants	▪ Lack of co-operation from internal stakeholders ▪ Obtaining reliable and accurate information from employees	▪ Building relationships to establish understanding, trust, and cooperation with internal stakeholders ▪ Openly communicate with all stakeholders to create alignment on objectives ▪ Acknowledge the concerns of all legitimate stakeholders and work collectively to resolve them
Functional Managers	▪ Might see the system as a threat ▪ Lack of involvement in the implementation and change management process	▪ Acknowledge and actively monitor and support the concerns of employees ▪ Maintain a strong presence throughout the implementation of the system ▪ Openly communicate with all stakeholders to create alignment on objectives ▪ Close involvement in the implementation and change management process ▪ Escalate any foreseeable issues to senior management
End Users	▪ Lack of involvement in the decision making process ▪ Balance operational requirements with ES implementation support	▪ Escalate any foreseeable issues to functional manager ▪ Openly communicate with all stakeholders to create alignment on objectives ▪ Clearly communicate business requirements from an information and process standpoint ▪ Obtain support from manager and peers to focus on properly supporting the ES implementation ▪ Close involvement in the implementation and change management process

Source: McLaren, T. S., & Jariri, I. (2012). Stakeholder Assessment and Management for Enterprise Systems Implementation Projects. In CONF-IRM (p. 68).

With an active involvement of stakeholders in the implementation procedure, the will gain a feeling of an ownership and valuable members of the process, which would lead to better adoption of new processes. There is no doubt that the success or failure of the ES implementation is directly and strongly influenced through the stakeholder management (Mclaren & Jariri, 2012).

3.4.2 Change Management

Change management can be explained as a resistance of employees, mainly users, to the change represented by the implementation and future usage of ERP. The resistance is a natural consequence of any change. In this case, the core elements that are taken into account are the ERP implementers, potential users and the ERP system itself. There are basically two sources of user resistance to the innovation: perceived risk and habit. Risk represents the perception of users that the new system could possibly threaten their competences and amount of work, or that they could lose the job eventually. The term habit refers to the daily activities being done routinely by employees; therefore, the change caused by implementing a new system puts them out of the comfort zone within the current practices. Change management can be, therefore, understood as management of people's resistance (Aladwani, 2001).

A research carried out by Aladwani suggests helping the top management to handle this issue through the distinguishing a three-phase framework compounded of: Knowledge formulation, strategy implementation, and status evaluation (Aladwani, 2001).

The first phase, knowledge formulation, does not have to be explained anymore, since its aim is to determine the individuals/groups who are resisting, analyze their needs, interests or beliefs. This has been already done in the previous chapter 'Stakeholder Assessment and Management'. One important thing that needs to be added is that in this case the change management relates closely to the end users who are supposed to use the implemented system on daily basis. The end users have low influence as stakeholders during the implementation but they have crucial function in its usage.

The second phase covers a strategy how to cope with this problem. There have been published several researched elaborating on the change management strategies, e.g. the Prosci's model, ADKAR strategy, cost minimizing, differentiation strategy, or Aladwani's Think-Feel-Do strategy. All of them have very similar features and approaches in order to try to change the employees' attitude towards the ERP. The common fundamental component of all strategies is communication. The last named strategy, the Think-Feel-Do by Aladwani, explains probably best the approach towards the successful change management for the purpose of this work, therefore, it is described in following paragraph (Kapupu & Mignerat, 2015).

The three-stage strategy Think-Feel-Do includes a sequence of activities of the top management towards the employees to prepare them for an ERP implementation. Initial actions should start already with the planning of the implementation itself. As stated earlier, communication is a foundation stone of the change management. Top management should build an awareness about the coming change and clarify how the system would work. In case there is no trust and awareness from the employees' perspective, the implementation should not even start. The approach of the top management could include newsletters via email, interactive presentations demonstrating benefits to the employees or even one-to-one session with key users, who would be able to spread the positive insights among others (Kapupu & Mignerat, 2015).

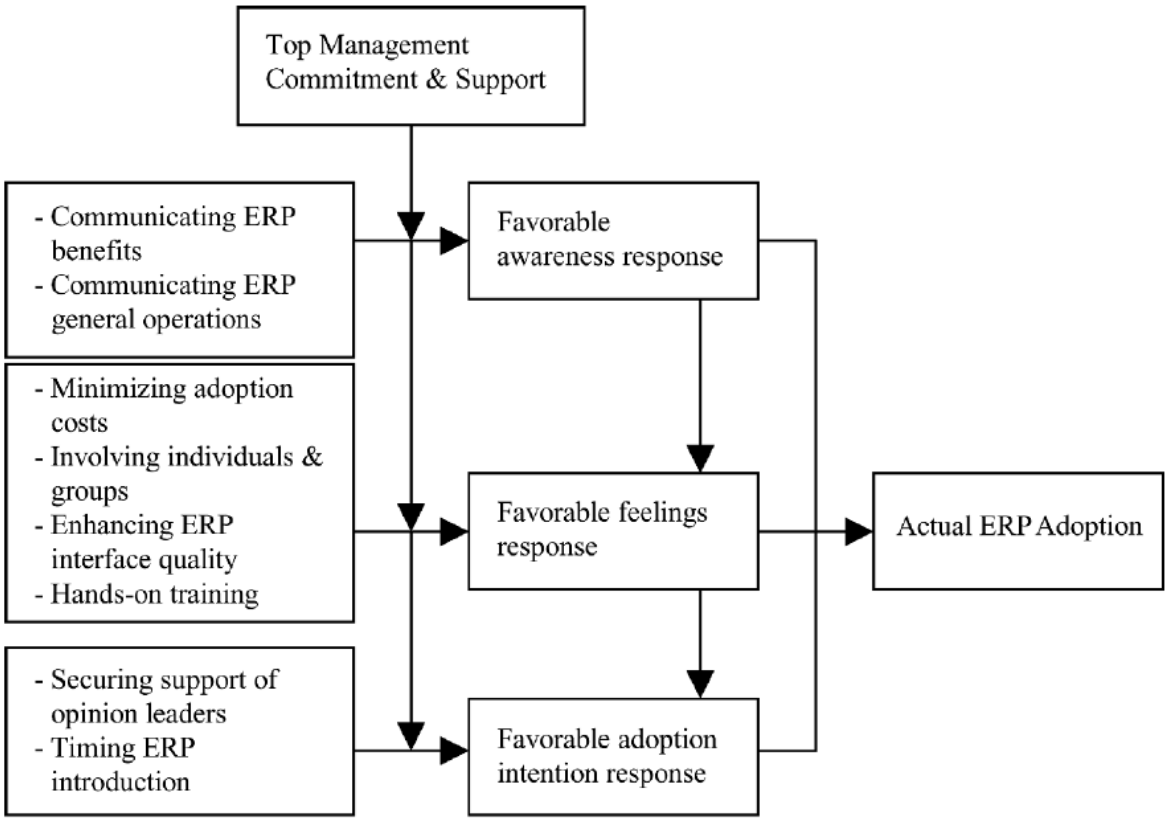
Second stage – Feel – is based on the emotions of employees. Ideally, they need to know that they are on board and important parts of the project. It is necessary that managers and people directly connected with the project and its decision-making are regularly present among the employees. Management must be open to listening to the employees' opinions or even solution of problems. Some key users can be already provided with trainings so that they get the knowledge what the new system has in offer (Kapupu & Mignerat, 2015).

The last step called Do stage is focused on the engagement of employees in order to grow their willingness to accept and adopt the new system. There is a greater emphasis put on this stage in comparison to the previous two. To reach the desired returns from the investment to the system, all users from all necessary departments need to obtain adequate skills and knowledge. Trainings represent an item in a budget that is often underestimated and cut. The consequences could be then disastrous. The consultants working on the project are trainers at the same time, and if they leave the project without passing the knowledge on key users, the lack of skills causes a limited or inefficient usage of the system. A part of the project is to create a detailed documentation, providing a guidance how to navigate the system or who to contact in case of any issues (Kapupu & Mignerat, 2015).

The last phase is to evaluate and monitor the used strategy. Since the success of the change management strategy depends on the top management commitment and support, it is necessary the top management takes appropriate actions when the feedback from employees is negative and the workers' anxiety and resistance is still in place. In that case, the management has to go back to the beginning of the process and re-evaluate and re-identify

users' needs and perceptions. The Aladwani's model of a structured and controlled change management strategy is illustrated in the figure below:

Figure 5 - Change Management Strategy



Source: ALADWANI, A. M. (2001). Change management strategies for successful ERP implementation. Business Process management journal, 7(3), 266-275.

To sum the chapter up, the figure underneath this paragraph demonstrates the immense influence of the top and projects management. The graph shows the results of Deloitte's survey from 2005, which questioned 29 different companies after their successful ERP implementation and reveals what they considered as critical success factors in change management (Altamony, Al-Salti, Gharaibeh, Elyas, 2016).

Figure 6 - Change Management Success Factors

Source: Deloitte., (2005), "ERP Change Management Survey", The Gullup Leadership Institute.

3.4.3 Project Management

As for the importance, project management belongs to the most crucial units in the whole implementation process. The project scale and complexity usually demands huge amount of time, human resources, money, etc. Although an enterprise possesses all of the resources for the implementation, there are still many aspects that can cause a failure of the project. A proper project management shall minimize the risks connected with the project failure and make sure contracted objectives are fulfilled, such as finishing on time or fitting into a budget. The frequent struggling and failures in the ERP implementation proves e.g. 'The Robbins-Giola Survey (2001)' stating that 51% of questioned enterprises confirmed their implementation as unsuccessful (Wonglikphai, 2014).

Project management differentiate from the top or senior management of a company. Top management decides which people would be part of the project. In majority of cases, a firm does not have enough skilled people to put together a team consisted only of its employees,

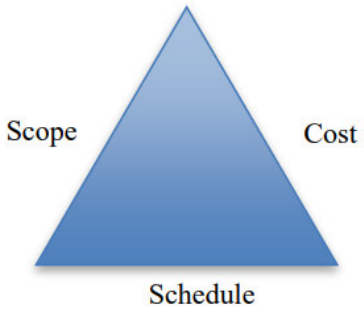
therefore, it opens a tendering process to find and contract an external company for the implementation. The core of the project management is then composed of managers from both companies, the contractor and the contractee. However, the particular members of the project team picks usually the contractor itself. Nevertheless, the whole project has to stick to the clear framework in order to be successful. The framework has 5 phases and each includes crucial activities that needs to be completed. In this chapter, a comprehensive analysis of these phases and their activities is carried out from the project team and project management point of view. The analysis tries to assign mentioned actions to involved parties to emphasize in whose competences and responsibilities a given activity is, and hence, who has the greatest power to influence the outcome either in positive or negative way. The 5 phases of the project are listed below and consequently analyzed individually in detail:

- Phase 1 - Project Preparation
- Phase 2 - Business Blueprint
- Phase 3 - Realization
- Phase 4 – Go-live Preparation
- Phase 5 – Go-live & Support

Project Preparation

The main objective of the preparation phase is to confirm the three equally important conditions of the project - the scope of the project, budget, and schedule. These three aspects are the essential content of the contract. Project scope defines 'WHAT' is supposed to be done, budget logically clarifies 'HOW MUCH' it will cost, and schedule determines 'WHEN' the work defined in scope will be ready. These conditions should be unchangeable during the project, however, in real life happens that especially deadlines need to be often postponed. In addition, next aspects are negotiated in preparation phase like the project plan definition, procedures, or organization. At this moment, both teams are also introduced, one from consulting (hired) company and the second from a client company (Lech, 2013).

Figure 7 - The iron triangle of project management



Source: Lamers, M. (2002). Do you manage a project, or what? A reply to "Do you manage work, deliverables or resources",. International Journal of Project Management, 20(4), 325-329.

The biggest workload lies on the two project managers from both teams, consultant PM and client PM. The analysis of the project documentation defines the activities that are then performed by the consultant PM. The list of activities includes e.g. the following:

- Project plan preparation: scope, budget, schedule, project phases description, milestones definition
- A definition of the organizational structure: members' project roles and responsibilities, role assignment to consultants
- Preparation of the project procedures such as: communication means, documentation, risk management, reporting, escalation, meetings, quality management
- Initial training of key users as for the functionality and configuration

The study done by prof. Lech from University of Gdansk states says that since the documentation is created before the project begins, the reality often differs from the documented plans. High decision-making capabilities of the consulting team is an advantage to cope with the sudden issues and changes (Lech, 2013).

Business Blueprint

During this phase, the business processes and requirements are analyzed. This part is getting more technical as the analyzed processes and requirements need to be reflected in the implemented system. For the purposes of this work, the most important fact in this phase is the close cooperation between key users and the consultants. Ideally, very detailed analysis

of the business processes, master data, interfaces, reports, authorization systems, or printouts need to be provided in the blueprint because it determines the design of the system.

As the technical factor and knowledge increases, the influence and competences of the IT experts is higher too. The collaboration between the consultants and people from the client company plays a crucial role as for the following phases of the implementation. The more clear and detailed the blueprint is, the easier, smoother, and faster is usually the implementation process as well. If a client does not know or cannot explain its business processes properly, the consulting team will have to figure them out as the project goes along, which often brings complications, problems, and consumes more time.

From this phase onwards, the influence is distributed more equally on top management, project management, key users and consultants. Top management should see the results in its change management strategy at this moment. The key users are now in touch with the project team and the implementation process itself, and they are supposed to contribute with their knowledge to the best possible form of the business blueprint. Their resistance to the new system could, therefore, jeopardize not only the blueprint but also the following phases of the project. The responsibilities of the consultants rest in making sure they obtain all necessary information from the client. Consultants are more experienced in the implementation process, which is why they know better what info and data they need to know, which means they must actively participate in the blueprint creation. The desired product of this phase is a stable business blueprint defining the system configuration and the RICEF (reports, interfaces, conversions, extensions and forms) (Lech, 2013).

Realization

The aim of the realization phase is to fulfill the objectives stated in the scope. The involvement of the programmers and IT experts is on the highest level while the influence of key users decreases. This is seen as a potential risk, because if the key users suggest any major change in functionality of the system in a late phase of the realization, it would mean re-working the already developed solution. To prevent this kind of issue, the communication line client-consultant-programmer must be very clear and intense. While the IT experts work on the technical part such as the data migration form the legacy system, system configuration, testing etc., other members of the project team has diverse tasks, mainly the

documentation and manual preparation and consulting activities supporting the best communication possible. The result of this phase is the configured and tested system and the detailed documentation and user manuals (Lech, 2013).

Go-live preparation

Moving closer to the end of the project, the involvement of the end users increases again. In case the development and testing are successful, the configuration is transferred to the production processes. All the master and transaction data are moved to the new system from the legacy system and the usage authorizations are given to users. The data migration between those two systems is the core of this phase. This is done by the consulting organization, in particular by the consultants and IT developers. Consultants also prepare a support plan for several weeks after system Go-live. The plan includes a maintenance agreement, communication levels, service levels, or responsible staff assignments. User trainings are in progress, performed either by consultants themselves or by key users who gained the knowledge of the system earlier. So that the key users are able to provide the trainings, they must be closely involved in the implementation process. The threat that occurs during this phase and that is often underestimated by the client organization is the data preparation, its cleansing and mapping. Wrong entries and poor quality data cannot be transferred to the new system. These issues can delay the go-live preparation process (Lech, 2013).

Go-live and support

The final step of the implementation process is go-live, which means that the system is launched and used for business. Consultants support the everyday activities of users, who already work with the system, and whose knowledge still might be poor. Next responsibility of consultants is to promptly fix occurred errors that were not detected during testing (Lech, 2013).

The project management is highly influenced by the chosen type of the ERP that are mentioned in the following chapter.

3.4.4 Technological challenges

This thesis is not supposed to go deep into the technological aspects of the implementation. However, some technological challenges and questions should be briefly clarified, since they have an impact on the management and implementation process.

As already stated earlier, the best and most secure way how to use the ERP most efficiently is to rather adjust the business processes to fit into the system processes. Implementing the standard functions of a given software package is less costly, easier and faster than customizing the software so that it is in accordance with the business. Based on this, we distinguish two types of the ERP solutions - Custom ERP solution and Vanilla ERP solution. Top management has to decide which one is most suitable for the organization.

Vanilla ERP solution is that an unchanged software package provided from the software company is directly implemented. The advantages of this solution is that it includes only standard functions of the software, therefore, the consulting teams have solid experience with its implementation from the previous projects. Due to the software simplicity, this kind of solution is easier, less time consuming and cheaper to implement than adjusting the software for specific business purposes by IT developers. Furthermore, in case the software remains unchanged, the software provider render a warranty for its product, it is easier to upgrade it, update it, and maintain it. On the other hand, Vanilla solution fails to cover complex and specific operations that limits a company to create a significant competitive advantage (Custom vs Vanilla ERP Solutions, 2018).

A custom ERP solution means that the original software is enriched with additional code written by IT developers. The customization has a huge benefit in possible coverage of unique business processes that are considered by management as key factors how to maintain a competitive advantage. In contrary, the tailored ERP takes logically more time to develop, requires skillful developers to build it and, of course, is more expensive. If the customization is high, the complexity and risk of implementation failure increases considerably. On top of that, once an additional code is added to the standard software, the provider usually does not provide any support or guarantee (Custom vs Vanilla ERP Solutions, 2018).

Many companies and their decision makers have often a tough issue to solve before deciding which ERP solution to pick. Either they would have to adapt or rework the company's

processes and operations to fit them into the standard system or they need to customize the software so that it reflects their business. An executive of a company that implemented SAP ERP software aptly comments the Vanilla solution as follows: 'SAP isn't a software package; it's a way of doing business (Davenport, 1998).

Another way, how to implement an ERP system from the technological point of view, is to determine a rollout strategy. This strategy decides the sequence of the implemented modules. As this decision is rather strategical, it is made by the top management of an organization. There is several options to choose as for the rollout approach. The most common ones are the first two listed; hence, they are explained individually below:

- Big bang rollout
- Phased rollout
- Parallel rollout
- Hybrid approach

The Bag bang rollout simply means that all the modules are being implemented at once, they are put into the business together in one big go-live and people start using all the modules at the same time. The Big bang strategy is limited by time and; therefore, many crucial components like testing are compressed. Because of the time restrictions, the Big bang solution is more suitable for smaller organizations with not very complex processes.

The Phased rollout is a total opposite to the Big bang. The modules of ERP are being implemented once at a time. The implementation has several smaller go-lives, which is why the phased method is more time consuming. In contrast, it offers more time for correction of errors during testing or for training of users. The phased method is usually applied in huge enterprises with many modules and complex processes. Nevertheless, the two methods can be combined according to the needs and demands of a particular company. Such an approach is then called parallel rollout. Further pros and cons of both methods are analyzed in the table below (Big Bang ERP Implementation vs Phased Approach, 2017):

Table 5 - Roll-out method evaluation

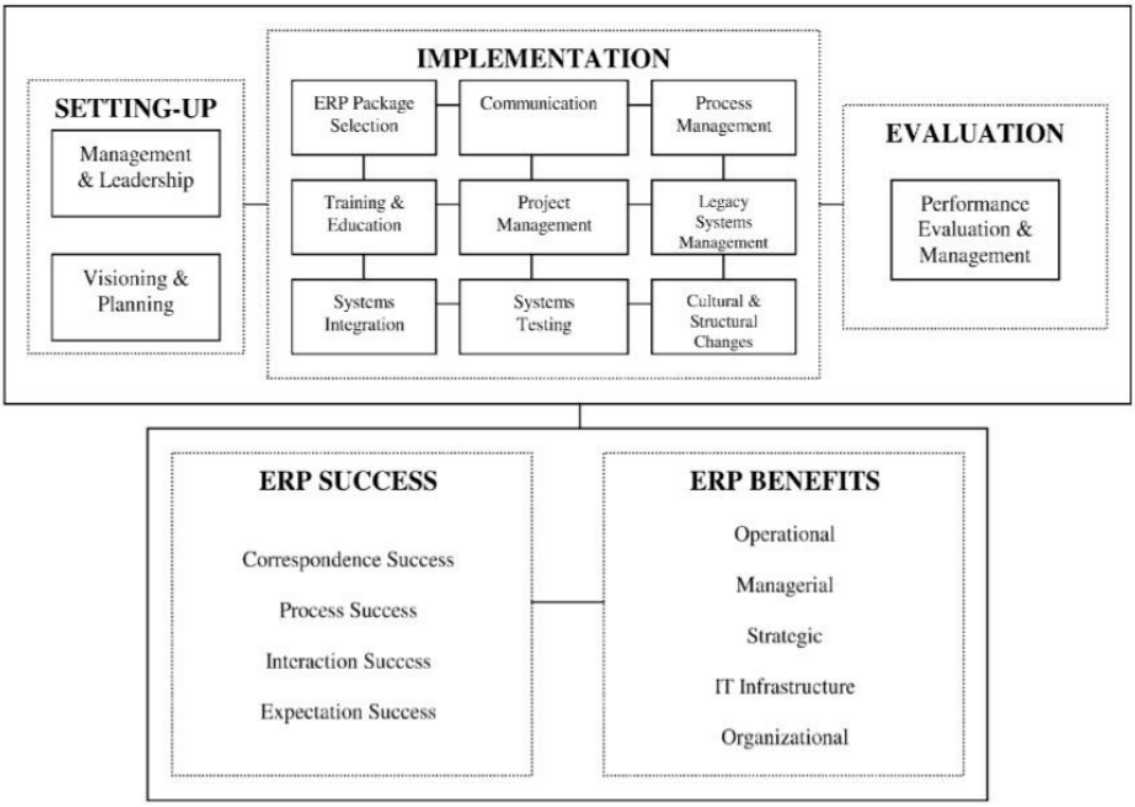
BIG BANG METHOD	
PROS	**CONS**
Shorter implementation time	Wide scope of potential system issues
Lower costs	Very limited testing phase
Single system usage in whole company	Temporary lack of productivity
PHASED METHOD	
PROS	**CONS**
Easier to fix problems	Higher implementation costs
More time for training	More time consuming
Easier to adjust to new system	Delay in ROI

Source: Big Bang ERP Implementation vs Phased Approach. (2017). Retrieved on 15/02/18, from: http://www.top-sage-resellers.com/blog/big-bang-erp-implementation-vs-phased-approach-pros-and-cons

3.5 Summary of the theoretical section

Before applying the analyzed theory on the real case studies and author's research and analysis of his own professional experience, there is a brief summary of what is covered in the theoretical section. The process of implementation can be divided into several phases or steps, each of them having different objectives, different people involved and different challenges. The theoretical part of this work tries to detect the framework of the phases and capture their processes and influence both on the company and the company`s management. Best way to illustrate the framework of the processes is to use a figure below:

Figure 8 - Taxonomy for ERP critical factors



Source: SEO, G. (2013). Challenges in implementing enterprise resource planning (ERP) system in large organizations: similarities and differences between corporate and university environment (Doctoral dissertation, Massachusetts Institute of Technology).

The work looks at stages of the implementation and their activities, and searches for the connection between them and potential outcome of the system implementation. As the purpose of this work covers how the management influences the implementation and vise versa, there are logically topics that surely influence the implementation, however, they go beyond the topic of the thesis, such as too much detailed technological factors (legacy systems, testing systems, etc.), cultural aspects, or evaluation and usage of the system which is not closely connected with the implementation process. The figure helps to get a clearer vision of what the theory covers and what it does not.

Factors influencing the setting up phase and the implementation are analyzed in the chapters assessing the stakeholders and their influence and also in the implementation criteria assessment. The core of the thesis is to work with the implementation itself. The components and activities are shown in the middle of the picture above. The theoretical section covers these factors in chapters Change management, Project management or Technological

challenges. The evaluation of the results or of the ERP does not relate to the implementation or management approaches in particular, therefore, it is considered as a topic outside the scope of this thesis.

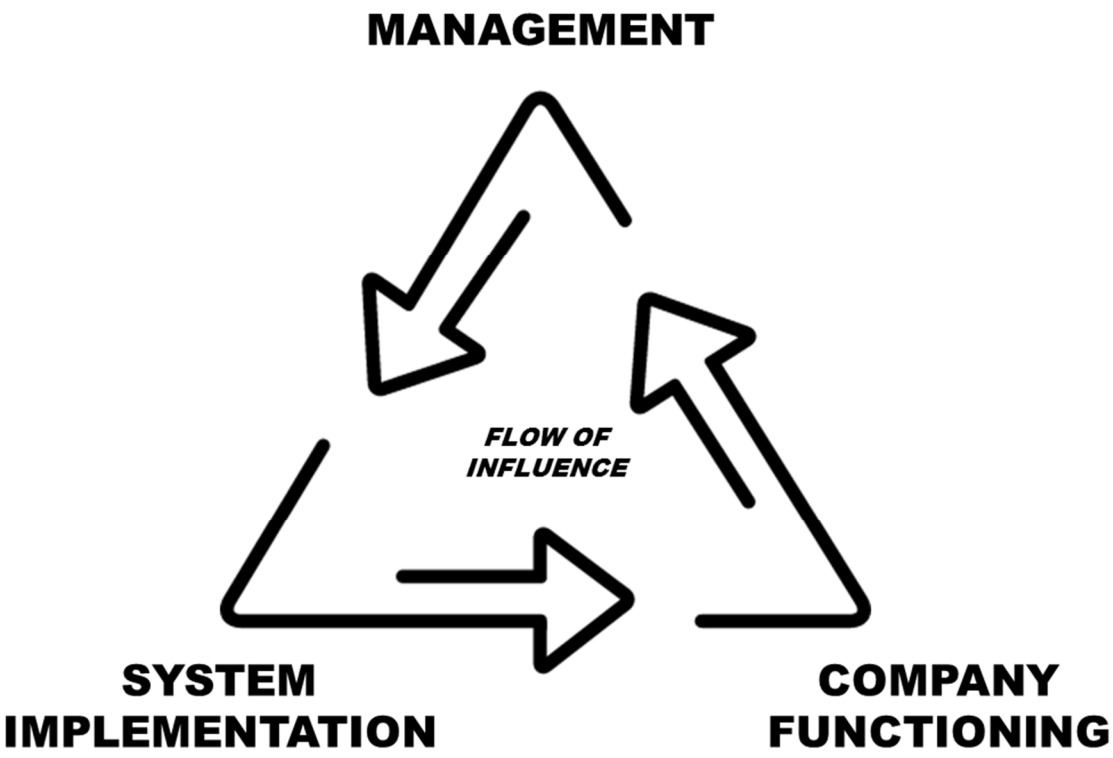
4 Practical section

The core of the practical part of this thesis consists of three case studies. Although the methodological approach of their analyses is same, there is one major difference among them. All three cases represent the real processes of the ERP system implementation in three different organizations. The analyses try to detect the actions, decisions, and approaches in the whole implementation procedure, which directly or indirectly influence the final result of the process. In other words, aspects that cause whether the implementation would be a success or a failure.

Unveiling and analyzing of those aspects is based on and compared with the theory obtained from the first half of the thesis. As the theoretical background and the scope of the topic indicates, the factors cover various types of managerial levels and their decisions during the system implementation. The consequences of those decisions are subsequently broken down and evaluated. It may seem from the figure below that solely management handles and controls the implementation process. However, it is necessary to remember that management influences various aspects reaching beyond the implementation process itself, which eventually have a great impact on the process and its result when they come together. The left side of the triangle illustrating the influence represents the area of the greatest emphasis in this thesis. As stated before, management affects the implementation process indirectly through many factors that are analyzed in the theoretical part. All those factors are part of the influential flow Management – System.

Naturally, also the practical section works mainly with this flow of influence covering the range of management activities and decisions. On the grounds of the proved outcome – the functioning of a company, no matter if it is positive or negative, the actions, decisions, and attitudes are assessed. The consequent outcomes are justified and, in case of the unsuccessful implementation, the erroneous factors are detected. In addition, a suggestion supported by the theoretical background for a possible correct approach is introduced.

Figure 9 - Flow of the influence



Source: Issued by the author of the thesis

The comprehensive analyses include also subsequent effects associated with the organizational functioning. In the scheme, those analyses can be perceived as the bottom flow between System Implementation and Company Functioning. There are several ways how the ERP implementation affects the functioning of an enterprise. Nevertheless, in the end the most important result is whether it raises or decreases profitability and helps to grow the company. Of course, an analysis of the consequences coming with the new system is provided too.

The last branch of influence, Company Functioning – Management, is barely mentioned since it is not directly related to the implementation and, therefore, stays beyond the scope of the thesis. The indicators of functioning do not have to be caused solely by the new system and management might take various steps to change the functionality without stepping in the implementation process. Furthermore, the results in functioning become noticeable after the implementation process is over when management is not able to influence the process itself anymore.

The difference among cases mentioned at the beginning of this chapter consists in the way the information about the system implementation was obtained. The research of the first two case studies is based on well documented publications done by other authors already in the past. The facts described in their works are scrutinized and compared with the obtained theory. The research of this work is based on the linkage, comparison and evaluation of the factual information with the theoretical background.

On the other hand, the third case study is an own research of the author of this thesis. His field of professional experience is, approaches and data collection is clarified in detail within the chapter *4.3 Car manufacturer case– Self-experience*.

4.1 Hershey Company case – Failure

4.1.1 Company background – Hershey Company

Milton Hershey, an American entrepreneur, started the candy business in 1894. His first attempts to succeed in this industry did not end well. Once at a time, he founded candy stores in Denver, Philadelphia, and New York, unfortunately all of them were closed. Eventually, he returned to Lancaster and established the Caramel Company that was finally successful. Its goods were spread over the United States and exported to Europe as well. After some time, he decided to manufacture chocolate, which went well too. Although his company produced over 100 types of chocolates, milk chocolate was still the one produced only by few Swiss companies. Hershey changed this by discovering the appropriate combination of milk, cocoa and sugar, and became the first US organization producing milk chocolate (Perepu & Gupta, 2008).

The First World War caused limitations in sugar import from Europe, therefore, Hershey began to acquire and build plantations and refineries in Cuba. The company went public already before the WWII. Before the WWII brought the rough times, Hershey Corporation managed to develop significantly. Thanks to the demand from US army, the company remained busy also during the War. The army required a special chocolate for soldiers that they should eat only in emergency cases. The chocolate should have not tasted good or melt, it should have weighted four ounces and boosted energy. Hershey actually developed chocolate named ‘Field Ration D’, which fulfilled these criteria and. By the end of the War, roughly 24 million bars of the chocolate were produced every week. After the War, Hershey

acquired several organizations in order to grow and strengthen its position in the market. Among those companies belonged for instance Reese Candy Company, San Giorgio Macaroni or Delmonico Foods.

Hershey's products are being exported to over 90 countries. Its sales grew between years 1969-2016 from US$ 334 million to US$ 7,4 billion. In that year, the company employed more than 16,300 people (The Hershey Company - Statistics & Facts, 2018).

4.1.2 Implementation process - Hershey Company

At the beginning of the 1990s, the investments into the IT in food and beverage industry was very low. Hershey Corporation was no different. At that time, it used several legacy systems for various functions. The strategy to reach sales US$ 5 billion should have been built on low prices on one hand and immense quantities of its products on the other hand. This approach required highly efficient logistics and supply chain system and management. Of course, both of these modules need a support of IT technology. To reach the desired objective, the Hershey's management started a project called Enterprise 21 in late 90s, which was supposed to improve the IT situation in the organization. A demand from retailer for better organization of their inventory and deliveries, Hershey Company decided to rather completely replace their IT systems and shift if to client/server. It means better data sharing with retailers, cost saving, more coordinated delivery process and improved customer service.

The initial aim was to implement the ERP by April 1999, they chose SAP AG's R3 ERP, together with other software form two provides – Manugistics and Siebel. SAP should have covered modules for finance, purchasing, warehouse, billing and material management. The other two vendors were supposed to deliver software for customer relations and marketing. The project goal was to integrate all the systems on a single platform. The budget for the whole project was set on US$ 110 million.

The deadline for rolling out to the new system was determined intentionally on April to avoid a busy period for sales, which was typically for the candy industry during Halloween and Christmas. Another reason for the deadline was the unsuitable legacy system Y2K that was causing difficulties. Due to this fact, the whole project, usually demanding roughly 4 years to implement, needed to be squeeze only into 30 months.

Although many modules were finished by January 1999, other modules including the critical order processing, billing systems, or planning and scheduling modules were behind the schedule. Eventually, some of the remaining modules went live in July 1999, three months behind the schedule. Orders for Halloween were already running in at that moment and Hershey Company started to be under enormous pressure. As a result, the management decided to use a Big Bang implementation method to be able to handle Halloween orders and implement the missing software at one go. With this decision, the company lost valuable time for important processes that are usually included in phased implementation method, such as finding errors and bugs through a proper testing phase and correcting them.

No long after the rollout that seemed to be without bigger problems, issues regarding order fulfillment, processing and shipping began to appear. Incomplete orders or delayed shipping were the first consequences of rushed rollout. Unfortunately, since the old legacy systems were already down, there was nothing Hershey's could do about it. Due to missing data about products and orders, Hershey Company had sometimes no other option than contact customers directly and ask for the quantity they received and ordered. Three weeks after the implementation, Hershey Company already knew it would not be able to deliver ordered goods within usual 5 days. It should be noted that the company had supplies on stock for eight days, which was unusually high. The higher stock reserve was prepared for any difficulties coming with the implementation, however, it was no enough, and the delivery time prolonged to 15 days.

The consequences were significant. Some distributors and mainly retailers lost their patience with the irregular deliveries and started to look for another supplier. Since these problems were not just a short-term blackout but persisted from summer 1999, Hershey's began to lose its credibility. Retailers started to fill their shelfs with Hershey's competitors' products; they suggested the problems might have rather long-term character. Customers simply did not care that much. As an executive of a competitive candy company said: 'If you don't have my toothpaste, I'm walking out. But for a chocolate bar, I'll pick another one. Customers are not likely to walk out of the store because there wasn't a Hershey's bar. They'll pick another candy bar'. It must be said that the problems with deliveries were brought about by faulty order entries and fulfillment in the system. Since the manufacturing processes worked without any problems, the warehouses were fully stocked with candy ready to be sent to

retailers. A paradoxical situation occurred – Hershey Company had full warehouses of goods, load of orders for the peak of the season but still the company was incapable of fulfilling their commitments and getting the products to its customers.

For quite a long time, to be more precise, for more than two months starting in July and ending in September 1999, nobody at Hershey's knew where the problem was. They thought that the issues are just a regular temporary negative consequence coming in hand with the radical system change. Eventually, analysts claimed the problem was caused by a couple of informal structures in the organization. So that the system works as it should, all the data has to be set and transferred very precisely. As for the Hershey's problem, all data related to the inventories was supposed to be linked to all physical locations and warehouses, where the goods were stocked. In order to prepare for the peak of the season and create sufficient reserve, Hershey Company placed products to any available space, not necessarily to a distribution center or a warehouse. This was exactly the stumbling point of the company difficulties. They sometimes even put the goods into some rented premises or rooms in factories that were not used at that time. Many of those premises were not identified in the system at all. Therefore, when an order from a customer was received, the system checked all available inventories that were officially recorded in the ERP, however, the improvised or temporary premises could not be taken into account. The source of this misunderstanding originated in very poor or even no cooperation between staff responsible for the operations, in other words, those who physically placed the products to particular location and room, and the technical people who implemented the system and entered the crucial data in it. Naturally, an incomplete and inaccurate database bungled whole inventory and delivery processes.

Firstly in September did Hershey Company announced publicly, they was having issues with orders processing caused by its new software. Surprisingly, people in Hershey Company still had not detected the core of the problem while admitting it in public, which put them into very unpleasant situation, since they had no idea how long it would take to fix the errors and come back to regular functioning. Again, the management took an unlucky approach in solving this issue. Only knowing the systems were not transmitting the orders, they started pointing fingers to software providers and blame their products they were not working correctly. After the case appeared in business media, the value of Hershey's stock price went

down. The price of a share did not get back and stabilize on the initial value until 2001, which is analyzed in the following chapter elaborating on the consequences of the poor implementation. The error in system was supposed to be fixed in early November 1999, at that time, the company already lost many orders for Halloween, it was most likely they would miss Christmas, and there was a chance they could miss part of the Easter too.

As a result, the enterprise admitted that they would not be able to solve the problems entirely until the end of 1999. Besides the drop in the share value, Hershey Company claimed it lost roughly US$ 150 million in sales. The detailed research on revenues, net profit, share value and other consequences is conducted in the following chapter.

4.1.3 Analysis & Evaluation – Hershey Company

The research in this subchapter should unveil and evaluate both positive and negative steps carried out by management during the system implementation. Subsequently, the negative decisions and actions are linked with the theoretically correct approach. After the managerial factor analysis, the most important consequences such as profit loss, share value loss, credibility, or market share development are scrutinized.

At the very beginning, there was a decision to make, whether to implement the new system or not. Hershey Company had two major reasons to replace the old IT infrastructure – firstly, constant growth of the enterprise simply required more suitable system, secondly, the old system did not work properly due to some of its faulty parts. From this perspective, the implementation of new software could be marked as necessary.

As for the choice of the vendors of software, picking three different providers cannot be seen as an aggravated factor. Hershey's was already using a software from Manugistics, therefore, they wanted to extend it for its purposes. Other two providers were chosen because of their wide scope of modules (SAP) or convenient specialization on particular operations (Siebel). On the other hand, combination of various providers and their different pieces of software required more precise technical preparation in order to avoid the problems in communication among them. In addition, phased implementation approach is necessary to employ to make sure the coordination, communication, and unification of processes is running smoothly. More dissimilar systems also use more interfaces, which goes in hand with more thorough testing. Both of these conditions, a phased approach and proper testing were omitted due to

the time pressure. Mentioning the matter of time, setting too strict deadlines turned out to be a crucial mistake, considering the low experience in ES implementation. Although Hershey's considered the seasonality of the sales and aimed to finish the implementation before the expected load of Halloween orders, they also planned to shrink the usually needed time for the implementing process at the same time. The deadline for go-live before the peak of the season had a superior importance for the company than making sure the system is without errors and ready to be launched.

One of the first underestimated steps done by the top management were in the enterprise system criteria assessment regarding the organizational performance. Linked to the 7-question theory, several question were not assessed properly, which led to complications in latter phases. Top management failed to perform organizational and functional analyses that would consider all operations of the company and assign them with a level of importance for putting their data into the system. Especially huge failure happened in identification of the warehouse situation and all physical processes that were taking place there. Next highly underestimated question was against which fact could the effectiveness be judged. Hershey Company had no previous experience with an ES implementation on this scale. The company could rely only on experience of the contracted consultants regarding the implementation itself, however, Hershey Company was supposed to share precise data and information with them (e.g. concerning the warehouse situation), which they eventually did not do. In result, the correct premises of goods storage were missing in the system and caused serious problems.

As the core of the whole issue is considered particularly the lack of communication between the staff physically operating with products in warehouses, including operational managers, and IT developers and consultant who were technically implementing the system. The importance of communication between these two groups of stakeholders must have been clarified and emphasized by the top management. This situation only proves the stakeholder assessment and management theory, which states that executive management must be strongly active in setting the communication channels among stakeholders and ensures that all stakeholders are engaged accordingly. In this case, operational/functional managers, who held medium or high influence of the implementation process, were not aware of the importance of sharing all information with IT staff. Even the seemingly unimportant

information about the detailed position of goods within the warehouse. The change management played a significant role in this matter. The top management did not notified stakeholders of their essential responsibilities. The operational management could not be blamed for not doing something it was not aware of. Due to the ignorance and lack of experience, Hershey's top management did not employ an effective change management strategy through which the involved stakeholders would have been informed about their responsibilities. The executives should have kept the lower management updated about the importance of sharing the information on regular basis. This could have been carried out as simply as by sending informative emails or organizing regular meetings. Apparently, top management did not hold a strong presence throughout the implementation process.

When finding out the deadline would not be possible to reach, the executives make another very hasty decision. They changed the rollout strategy from phased method to big bag approach. In praxis, this means the original and more suitable method, in which the system modules would be implemented and tested one at a time, was abandoned. The more straight forward, less thorough and less time consuming big bang method was used from that time on, in order to keep up the time deficit and still be able to finish the project within the planned deadline. Using the big bang method is risky in more complex projects like the one at Hershey's. All modules are rolled out at the same time, without proper testing of the cooperation among them, therefore, the chances for unexpected errors occurrence is much higher. In addition, when the company decided to switch the rollout methods, orders from customers for Halloween already started to flow in. At that moment, successful managing of all of the orders would have been difficult, even if the big bang rollout had gone smoothly without any complications.

Due to the limited time of the big bang strategy, not only testing but also training is simplified and compressed too. Again, even if the big bang rollout had gone very well, training employees to use three new and different systems would have been almost impossible during so short time period. Training is an essential component of the change management strategies. Hershey's management underestimated the trainings just as the whole change management strategy. It should be noted that the lack employees' skills was overshadowed by the non-functioning system. In case the system had worked properly from the beginning,

the inadequate training would have been more noticeable and probably would have had a greater impact.

A correct decision to make in Hershey's situation would have been postponing the go-live and sticking with the phased rollout method. In that way, the company would have maintained the time for proper testing of the system and making sure all errors and bugs are fixed. Analysts later found out that revealing the error regarding the faulty or missing data related to the product storage locations and delivery would have taken approximately 3-6 weeks of additional testing. A several-week delay in go-live would have caused significantly less damage to the company than chasing the initial deadlines to the detriment of appropriate testing. Moreover, top management lost some valuable time while trying to find out what was the cause of the faultily working system. Instead of searching for the source of the error as quickly as possible, they started to blame the software providers. Finger pointing was not the best problem solving strategy by the highest level of management of such a big company.

The consequences of the unsuccessful system implementation were perceptible. At first, Hershey Company lost their credibility at customers when they either did not get the ordered products or they got them with huge delay. Consequently, as some customers started looking for alternative vendors, Hershey's sales and net income plummeted. The following figure represents the quarterly sales and net profits during the years of system implementation. Since the first signs that something was not working as it should appeared in August, 1999, the quarterly result in sales counted in October, 1999 illustrates best the decrease volume. Between 1998 and 1999, the sales went down by 12%, or in other words, by US$ 150 million. As can be noticed, the revenues increased in the following year when the system was already running and the performance of the company started to stabilize again. However, it does not have to be remarked that such a loss in profit is very negative consequence even when it occurred in a single year.

Table 6 - Hershey's financial performance during implementation

(In US$ thousand)

	Quarter ending Oct 01, 2000	Quarter ending Oct 03, 1999	Quarter ending Oct 04, 1998
Net sales	**1,196,755**	**1,066,695**	**1,217,237**
Cost & Expenses			
Cost of Sales	696,431	634,042	706,605
Selling, Mktg, Admn	303,688	268,575	311,658
Total Costs & Expenses	**1,000,119**	**902,617**	**1,018,263**
Income before interest & income taxes	196,636	164,078	198,974
Interest Expenses net	21,152	20,507	22,691
Income before income taxes	175,484	143,571	176,283
Provision for income taxes	68,079	55,993	68,750
Net Income	**107,405**	**87,578**	**107,533**

Source: Hershey CO. (2018). Retrieved on 05.03.18. from: http://www.annualreports.com/Company/hershey-co

Together with the loss of the customer trust, which reflected in the above mentioned sales, the Hershey's credibility dropped by shareholders too. The timeline of the stock price development in the appendix shows contains numbers referring to important milestones in the implementation process. The influence of the faulty implementation clearly reflects in the stock price development. Detailed comments of the numbered price development follows here:

1. The implementation began at the end of 1996. At that time, the price of shares was constantly increasing.
2. The planned deadline of the rollout was endangered. Top management decided to switch the rollout approach on the big bang method in July 1999. There was no influence on the price, as the problems were known only internally.
3. First delivery delays occurred in August 1999. The customers started to complain and search for a substitution. The stock price began to fall.
4. In September 1999, Hershey Company announced publically the company was dealing with major issues with their newly implemented IT system. The price of shares kept falling.
5. The problems were solved in November 1999. At that moment, the stock price was on the lowest level during the whole crises. Eventually, it fell on $18,88 per share at the end of January 2000. In comparison, $31 was the price of share one year sooner, in January 1998.

6. During the 2000, revenues got back on the desired track. However, the stock price had not fully stabilized at that moment yet.
7. In July 2001, both sales and stock price became stable again. Moreover, next stage of SAP implementation projects started.

Besides the loss of revenues and sales, and decrease in customers' and other stakeholders' trust, Hershey's lost also roughly 0,5% of the market share, least according to the company's estimations.

4.2 Elf Atochem case– Success

The analysis of the second case study cannot be more different from the previous example at Hershey's. One could think that comparing companies from absolutely different business areas does not make any sense. From the point of view of the thesis topic, the industry is irrelevant. As the theoretical section of this work indicates, the enterprise system implementation is influenced by common factors that do not relate to the specifications of a given business sector. The Elf Atochem case represents the smooth, correct and successful process of ERP implementation from the very beginning to its end.

4.2.1 Company background - Elf Atochem

The Elf Atochem came of an American chemical company founded already in 1950s; it was named Pennsylvania Salt Manufacturing at that time. After a major destructuralization of French chemical industry, when several French chemical companies were integrated into former Elf Atochem, the headquarters moved to France and the company was renamed on Arkema.

Nowadays, Arkema is a manufacturer of special chemicals and advanced materials. It is a global company operating in roughly 55 countries with almost 20,000 employees and €8.3 billion in sales. The core business can be divided into three branches: Industrial specialties (Thiochemicals, Fluorogases), Coating Solutions (Acrylics), and High Performance Materials. The company went public as late as in 2006 on the Paris Bourse.

Nevertheless, for the purposes of the thesis, the name Elf Atochem is used since the organization was using this name during the ES implementation. In 1998, Elf Atochem acquired or created joint ventures with several other companies, which caused that new divisions were established. Other consequence was that the processes became highly

fragmented. Therefore, Elf Atochem decided to implement ERP system in the same year (Arkema Americas, 2018).

4.2.2 Implementation process - Elf Atochem

After the mentioned mergers and acquisition in 1990s, IT systems of the Elf Atochem's French subsidiary were fragmented among 12 different business units. Those business units were tracking their financial data independently and the processes of the company were not integrated. For instance, ordering systems were not linked up with the production systems or budgeting was not connected with the sales forecasting, etc. This incompatibility caused jagged data flow in the organization. Top management could not make precise and timely decisions since it was not receiving the appropriate information.

In order to cope with the negative aspects related to the IT and process fragmentation, top management decided to invest into the SAP R/3 system that would integrate the business units. Although the R/3 ERP software was getting more and more popular among enterprises, Elf Atochem did not perceive the investment only as a matter of IT improvement. The company took the transformation as a chance for re-organization of the business and taking a new strategy.

As soon as Elf Atochem analyzed the situation, it was found out that the origin of the company's problem was, in fact, the fragmentation of its organization, not the fragmentation of its systems. Taking an organizational point of view, both Elf Atochem and its customers suffered from the business incompatibility. The company units shared the same customers; however, they were run and managed independently. As a result, the lack of compactness made doing business much more complicated, especially for customers. Ordering goods meant that customer had to get in touch with several different units and then, he had to handle a series of invoices in order to pay for the products (Davenport, 1998).

Based on the complicated ordering process, even a customer himself could imagine how confused the things were within the company. Processing an order took circa four days, although only four hours of net time were needed for all necessary actions. Over $6 million of inventory was written off each year due to the uncoordinated production and independently managed inventory. As some of the production lines altered often, several plants must have been closed. Furthermore, because of the missing continuity between

production and ordering, the delivery dates were very difficult to determine, which naturally led to the customer loss (Davenport, 1998).

In chemical industry, commodities represent a significant part of the products. And since the competitive advantage cannot be gained through the product differentiation, the customer service plays a major role in the competitiveness. The executives were deeply aware of this fact; therefore, they tried to find a solution, as for the enterprise system, how to fundamentally improve the level of services. They decided to structure the implementation of the ES into four key processes, which were affected most by the organizational fragmentation. Among those processes belonged material management, production planning, order management, and financial reporting. In addition, these processes were immensely influencing the level of customer satisfaction and profitability of Elf Atochem. In order to fully focus on the enhancement of customer relationship management, the company abandoned the implementation of those modules that do not directly affect the customer service such as human resource management or plant maintenance. The company has been already using sufficient systems for those modules anyway (Davenport, 1998).

Consequently, Elf Atochem also changed its essential organization structure. The financial departments from fragmented units, such as accounts receivable were consolidated into one corporate function. Once the system is running, the company would be able to manage easily all of the orders from a particular customer, as they would be covered under a single customer account in the system. Then the company could issue a single invoice instead of handling several payment documents. Additionally, they unified the different customer service departments in similar way and provided the customers with a single contact for tracking orders and sharing their problems (Davenport, 1998).

One of the greatest strategical advantages in comparison to the past would be gained through the real-time information flow. This flow would enable to connect demand and supply for the first time, in other words, it could link sales with production planning. The production could be flexibly altered according to the customer orders.

After the proper analyses and preparations described above, the implementation project could start in Elf Atochem. As for the scale of the implementation – four ERP modules within one project is considered rather as a big process – the company took a responsible

attitude also regarding the team composition. The project team was compounded of 60 people who reported the progress and milestones directly to an executive committee member. Among the team members belonged business analysts, skilled IT developers and consultant as well as several so-called super users who made sure that the system customization reflects the real business processes in the best possible way. Super users were also key people in transmitting the knowledge to their departments and providing trainings to other staff.

A wisely chosen phased rollout method ensured that the complex processes were manageable and trackable. This approach also enabled a continuous improvement of the system configuration. For instance, a crucial error in the shipping processing occurred during the implementation of the second unit. However, the origin of the error came already from the first unit, which was wrongly configured. Due to the timely error exposure, the system could have been adjusted without major delays or inconveniences. It must be noted that Elf Atochem highly relied on its own staff since only 9 external consultants were hired. The rest of the team were the employees of Elf Atochem.

The company detected an increase in customer satisfaction even before all 12 business units were completely implemented. Elf Atochem could have been sure already before the final rollout that the aim of handling 95% of all orders with a single call would be reached. Furthermore, the company reduced significantly its costs for receivables, inventory and distribution, which both increased its efficiency, and cut operating costs by millions of dollars (Davenport, 1998).

Analysis & Evaluation - Elf Atochem

The great success of the ES implementation at Elf Atochem arose primarily from the excellent commitment, awareness and preparedness of the top management. Straight from the beginning, the executives were fully conscious of which actions are imperative. They knew what they were doing and also what they would do in case of various scenarios.

The executives understood the necessity of the investment to new IT platform; however, they rushed neither the preparation, nor the process of the implementation itself. This sort of deliberation is rare in comparison to other companies undergoing such a major change in IT structure. Other implementation cases often includes overestimated aims and rushed

decisions in order to keep up with strict deadlines. Besides that, hasty decision-making is usually a reason for chasing the competitive advantage too.

Top management see the software installation more as a technological matter and push the potential strategical advantaged connected with the new system aside. Nevertheless, this underestimation did not concern Elf Atochem's executives. They clearly set the change of their system as a strategy aiming at the consolidation and automatization of the processes. For this purpose, the company deeply analyzed its structure and activities at that time. The strengths and weaknesses were revealed and after that, a clear and stable decision was made based on the findings. This behavior of the management proves that the enterprise was stressed much more than the system. A common mistake occurring during the implementation regularly is that management emphasizes the system and expects it solves the struggles in company functioning. The truth is, which Elf Atochem was obviously aware of, that understanding the company needs, aims and values must be safe and sound before the decision to change the IT systems is made.

To analyze another clever managerial approach, the distinction of critical success factor of the company's performance should be mentioned. The management distinguished the aspects and processes within the enterprise that create an added value and help to grow the business. Based on this internal analysis, Elf Atochem discovered that the difficulties with lengthy order processing and inefficient communication with customers was not caused by the fragmentation of the IT software but by the fragmentation of the whole organization. In fact, this finding had the same solution as if the software were fragmented itself. The company decided to implement the SAP ERP system which basically integrates both the former partial legacy systems and the fragmented organization represented by many different business units too. As a matter of fact, the awareness of fragmented businesses brought the possibility to take a strategical view on the whole IT change - it was analyzed and decided how the IT system change supports and even improves the above mentioned critical operating aspects. As a result, the organizational modules, in other words departments, were scrutinized and evaluated whether they should or should not be included and integrated in the new system. Eventually, based on the key factor residing in customer service, the four modules were chosen to cover in the ERP since they had the greatest impact on the customer relationships – Material management, production planning, order management, and financial

reporting. Other modules that did not affect the customers on such a large scale were kept unchanged since they supported the company functioning very well and; therefore, there was no reason to look for an alternative how to replace them. In addition, this decision significantly reduced the complexity of the project, decreased a potential risk regarding possible complications, and finally yet importantly, it saved the expenditures. Then, Elf Atochem restructured some of its positions and processes to fit better to the system. Again, one of the many correct steps the company took, instead of thinking that the system should by fully customized according to the needs of the organization. For instance, as the system itself cannot change the organizational behavior, a new job position was created – demand manager. The demand manager was supposed to link the unified sales and production planning process. The position immensely helped to reduce the delivery time, since the manager could create sales forecasts, assess plant capacity, develop production plans, and so on. All these actions enabled to schedule an order and set a prompt delivery date. This kind of position could not have existed before the ERP implementation as the necessary information about mentioned processes was strewn over the different business units.

Framed with the theoretical background, there was not much Elf Atochem could have done better, at least according to the collected data. Already during the preparation phase of the project, the commitment of the top management was enormous. While assessing the criteria of the enterprise system, the functional and organizational analyses came up with the clear results, which were taken as a launch pad for important decisions. Through the organizational analysis, the top management exposed the fragmentation of the company. Consequently, it was able to decide how to the business units through the ERP system. The second analysis regarding the functional site of the enterprise showed the critical success factors of the business, which was the customer service. According to these indicators, the decision to implement only those 4 modules that provided the biggest improvement turned up to be the most efficient solution. The thorough planning covered also the restructuring of the departments and positions. In particular, the unification of financial processes such as accounts payable, accounts receivable or procurement caused the enhancement of order processing and invoicing. The only aspect that cannot be determined from the collected materials regarding the Elf Atochem case is the way of effectiveness judgement. The company had no prior experience in the ES implementation of this scale, which is why there was no chance to compare the implementation internally with past performance. As the

company did not hire any consulting company to lead the project, the possibility of relying on external skills and experience is also off the table. Objectively, Elf Atochem probably either referred to similar implementation case of other company that it took as a model, or it simply relied on reachable goals that kept the whole process of ES installation on track.

When the implementation process began, the responsibilities of different levels of management were clearly set. Together with proper change management, the operational managers lying on the bottom of the Anthony's hierarchical pyramid, were involved most into the initial trainings of ERP utilization. Their operational knowledge helped to adjust end-user processes and eventually pass the skills in using the system to their departments. The middle management displayed as the most important one from the Anthony's pyramid indeed had a great impact on customizing the systems business processes. This task may seem simple; however, it represented one of the most complex responsibilities due to the high fragmentation of the company. For this reason, one of the executives was a stable member of the project management that can be, in fact, considered as a middle management too. His presence created very close connection between the middle management and executives. The reporting and flow of information became extremely efficient thanks to his direct involvement into the implementation process itself. In this case, his involvement means that he was a regular member of the project team present on daily project operations. Through this close linkage between two managerial levels, the strategic and tactical decisions were going hand in hand.

To evaluate also the approach towards the critical success factors of the ES implementation, the synergy of the mentioned commitment and preparedness assured that none of the general CSFs were underestimated. The plan and vision has been described already in the previous paragraph. What needs to be pointed out besides the commitment is the change management and communication. Deployment of own employees into the project instead of contracting an external consultants made sure the Elf Atochem's staff actually believed in the vision that was set by the executives. They were directly involved in the project, they were aware that the IT change is essential for the sustainability of the company, and therefore, after being very well informed about everything, they felt the same commitment and responsibility as the management at any level.

The overall targets and expectations were not only fulfilled but in many aspects also surpassed. The project finished before the planned deadline even without spending the whole budget. The company units and processes were successfully integrated, resulting in immediate improvement of the customer relationships. Unfortunately, as Elf Atochem became a publicly traded company in 2006, there are no public sources that could be used for an analysis how the new system affected the profitability of the enterprise (Davenport, 1998).

4.3 Car manufacturer GTS project– Self-experience

4.3.1 About the project

Following case study differs from the two previous ones in one essential way. All of its description, analysis and evaluation come from the personal experience of the author of the thesis. His presence at the project during its last phases, namely during the testing, roll-out and final support or also so-called hyper care gave him sufficient understanding of not only the managerial aspects but thanks to the access to the documentation he has also an overview of the initial planning of the project. This personal experience enabled him to evaluate to a certain level both the managerial approach of the client and the project management provided by the consulting company operating on the project. Another difference in comparison to the cases at Hershey's and Elf Atochem lies in the analysis depth of certain parts of the project. The two previous cases are viewed quite broadly, a wide scale of processes, decisions or actions is taken into consideration; however, their analysis is not very detailed. On the other hand, the breakdown of this third case consists of much deeper scrutiny of a couple of narrower aspects of the project – namely the planning and communication. These two factors influenced significantly the partial milestones as well as the result of the project. Furthermore, the case cannot cover the analysis of the influence on the company functioning. The reason for that is very simple. Although the implementation itself has been finished, the hyper care phase is planned to be in progress till June 2018. In other words, the consequences related to the business cannot be available yet.

The company implementing the SAP R/3 system belongs among major world car manufacturers. It is located in Germany; however, due to the confidentiality of data, the company name will not be published in the thesis, neither more information will be provided

about the history, structure or functionality. This kind of information has no impact on the results as for the purposes of the project analysis. The enterprise has implemented its first SAP software very early, which is why it uses nowadays wide scale of SAP systems throughout the organization. Basically, in last dozens of years, there have been many implementations projects going on that aim to extend the unification of system modules and business units across the enterprise.

In fact, the author's employer responsible for the project belongs among the 'big four' consulting group. The partnership between the consulting firm and mentioned car manufacturer has lasted already years and since the consulting partner has accomplished many successful implementations in recent years, the car manufacturer become one of strategical clients of the consulting company. At this moment, there are several small projects implementing new pieces of software within the company. The term small projects means that either a small part of a functional module is implemented, e.g. new feature of warehouse management, or a system is installed only for a particular part of company, for instance only for one country, specific factory or a particular port. As already mentioned, because of an early use of the enterprise system, the organization's SAP software network has become quite complex. In other words, all major modules had been already implemented and now the partial improvements or let us say smaller but more advanced systems are on the schedule to be implemented. The fact that some projects are small or narrowly focused does not necessarily meant they are less important for the company. Any software installations no matter how wide scope of influence it has, represents its risks to the company. Furthermore, even the smallest projects require significant both financial and time input; therefore, the commitment, planning, and focus should be same as during any other project. Even smaller implementations can cause major difficulties for a company, not only financial but also as for the public perception and customer relation. On the other hand, management has very good reasons why to implement even those small and narrowly focused systems, since they are often able to save immense amounts of money or to significantly enhance a particular function of an enterprise.

The module, or maybe better to call it submodule, which has been implemented in the car company was supposed to take place in time period between August 2016 and November 2018. The go-live was postponed due to several complications that are analyzed in this

chapter and eventually happened in February 2019. Although the project has been quite small, the whole process from planning to final hyper care has taken more than two years. The project proved that the time necessary for application of the project scope does not have to be proportional to the size of the project. Nevertheless, it must be noted that even though the project has been rather small as for the number of involved people and influenced business area, the complexity remained high.

The subsystem of the ERP that is being talked about is called SAP GTS, which stands for Global Trade Services. The aim of this system is to handle the four main areas related to the import and export of a company. In the past, these functions were included in the functionality called Foreign Trade within the regular module of SAP ERP – in logistics. Several years ago, SAP decided to create a separate system for trade services and came up with the GTS system. GTS covers four main areas connected with the global trade:

1. **Customs Management**: The core of the GTS handles the customs and tolls related duties for both import and export of an enterprise. The system lowers the risk looming in possible sanctions for incorrect custom clearance of goods. GTS is connected directly with the customs office, which enables efficient and timely communication and cooperation. The effectiveness of customs management in GTS reduces the financial means, time and paperwork at the same time.
2. **Compliance**: The aim of this functionality is to prevent from any illegal activity linked with global trade. Firstly, it controls whether the traded goods have valid licenses and; therefore, are allowed to be transported across countries. Secondly, GTS monitors Sanctioned party list (SPL) that includes banned people, companies, or countries from trading. Among those subjects could belong e.g. terrorist organizations. Furthermore, countries with embargo are managed in the compliance section as well as dual-use goods licensing that provides a detailed control of goods that can be used for military purposes, for instance chemicals.
3. **Preference processing**: is a function supposed to remove or minimize tolls connected with the business. The way how to reach this aim is to select the business partners or materials from the countries within the free trade areas, possibly choosing the alternative with lowest customs costs.

4. **Intrastat**: stands for Electronic Compliance Reporting, which is a system that monitors, collects and measures data related to traded goods within the EU. The system is obligatory for all members of the EU and serves mainly as a statistical tool.

GTS system is relatively new software in the business environment on one hand, and has very specific and narrow functionality that is superfluous for SMEs and many enterprises too. Roughly ten years ago, the functionality providing a solution for customs, import and export was included within the logistics module in regular ERP. As the demand for this submodule had been increasing more and more in past, SAP company decided to fully detach the customs processes from the ERP and created separate module called GTS. As a result, still there are not many consultants with broad knowledge of GTS, which makes the implementation of GTS software even more risky and complex than it already is. Since the German carmaker has used wide range of SAP systems, it decided to consolidate and make its import & export processes more efficient. Other reasons for choosing the software were the centralization of customs procedures, data harmonization and reduction of old systems and interfaces among them.

4.3.2 Project analysis and evaluation - Self experience

The general scope of the GTS project has been extremely narrow and specific within this project. The GTS system, which represents a small piece of software, has been implemented and rolled out only for one business unit, which is a shipping port in northern Germany called Bremerhaven. In spite of this straight forward decision, the implementation remained quiet complex. In general, all SAP implementations were and still are complex in this car company. The reason why is that the organization has majority of the SAP functions customized for its specific processes and purposes. In other words this means that the enterprise does not use many SAP functions in standard,; and therefore it requires lots of additional coding within the SAP software. Naturally, the tailor made functions require deep understanding of the specific business processes as well as skilled IT developers who are capable of writing the demanded code. Interesting fact is that the SAP software network is so developed within the car company that developing its own customized functions within the system continuously makes SAP company scrutinize the additional code and decide whether to include newly developed functions into the standard

functionalities of next version of SAP software. In the past, it really happened that based on the tailor made functions developed internally by the company, SAP really started to offer as a standard processes in its updated versions of its software products.

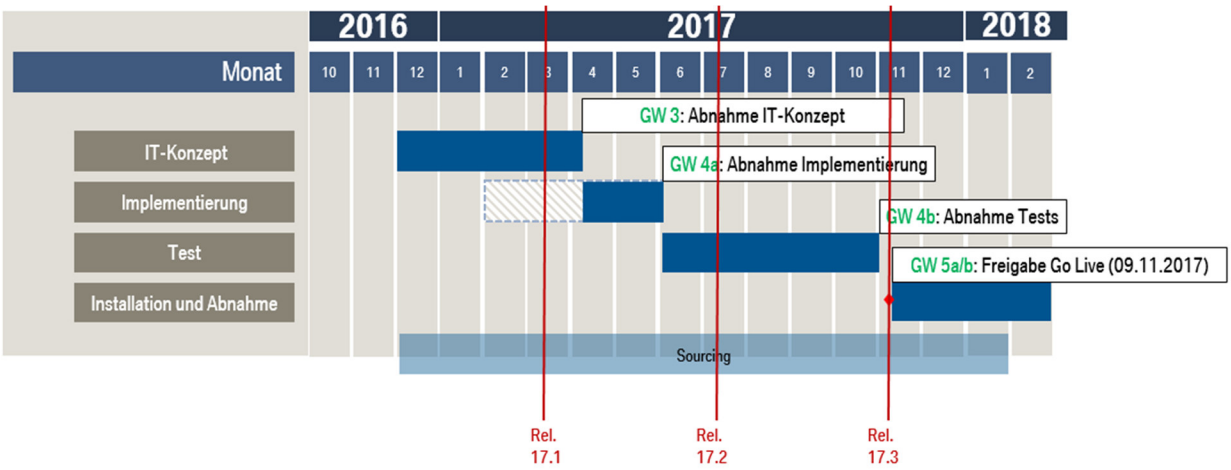
It was no surprise that the consulting company employing the author of the thesis (hereinafter referred to as "the author's consulting company") won the tendering process and become responsible for implementation process. The lack of experienced consultants in the GTS system forced the author's consulting company to subcontract other consultants from different companies, as it did not have its own skilled manpower. It must be said that this kind of subcontracting occurs quite often in consulting environment. Due to the amount of implementation projects around the world and the limited number of skilled consultants, even big consulting companies need to subcontract freelancers or consultants from smaller organizations to fulfill the necessary project staffing.

The top management of the car manufacturer and the management of the author's consulting company began the planning phase very thoroughly. The consulting management was supervising and planning several smaller projects going on simultaneously at the same time. The Bremerhaven project, which is the name of the GTS implementation for the Bremerhaven port, has been a part of the complex group of GTS projects. Although the partial subprojects have not depended on nor influenced each other, they have been managed together by the same consulting management. To illustrate at least a rough image of what has been going on in the company as for the ES implementation, the figure *8.2 GTS projects implementation timeline* is provided in the attachment. Although more projects were supervised by only a couple of people from the top consulting management at the same time, setting the deadlines and scope of the Bremerhaven project was done properly and deliberately. The top management teams, both from client and consulting side, had a solid cooperation experience coming from several successful projects in the past. The commitment from the executive camps was firm since both parties valued and respected each other, and appreciated their long-term partnership.

As well as the global timeline of all GTS projects in the company, also the Bremerhaven project itself had a planned timeline in order to fulfill the agreed deadlines. Again, this planning was a result of the top management negotiations with the consulting management. Eventually, a time period of circa one and a half year was set for the project, during which

the phased method of rollout was supposed to be used. In addition, 3 milestones represented by the releases were planned during 2017. These releases work as smaller rollouts of some parts of the system that have been already ready to be deployed into the operation. The timeline of different phases of the project is shown in the following figure. Since the figure was retrieved from internal project archives, the agenda is, of course, in German. The four phases on the left side of the figure in grey represent IT-concept, Implementation, Testing, and Installation and Handover:

Figure 10 – Project timeline



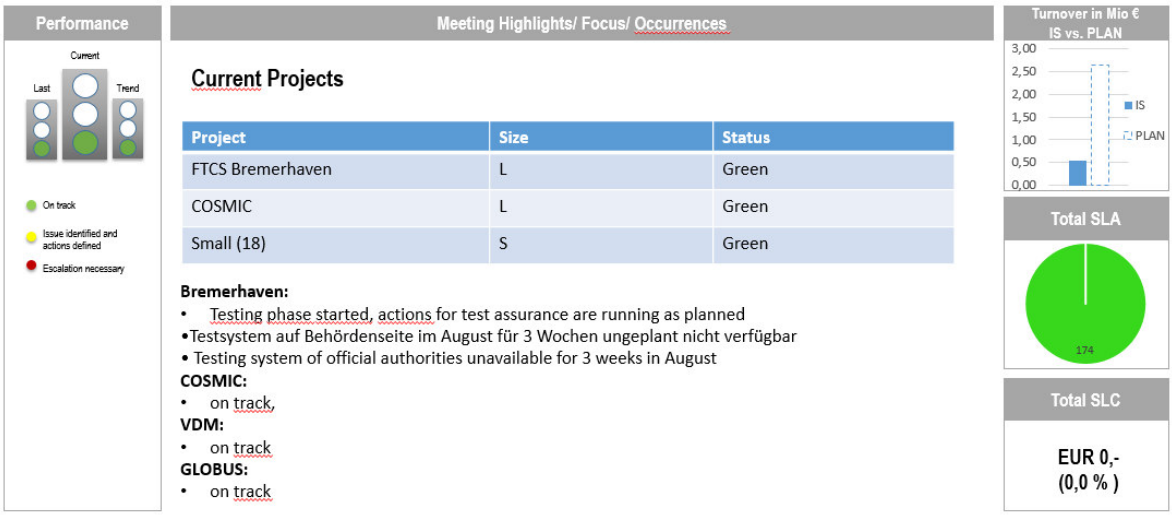
Source: Issued by the author based on the project internal data

At the time of timeline creation, management did not count very much with possible difficulties complicating the project. In the end, the project had to be prolonged in about 3 months. Further in this chapter is explained why.

The design and implementing phase went as planned. Roughly 15 consultants supported by about 10 client's employees worked in a synergy towards the common objective. The project management led by consulting company reported regularly the status of the project progress to higher consulting management which was supervising all ongoing GTS projects. The consulting management then organized bi-weekly meetings with the client top management to report and summarize the situation of project(s). The figure below reflects the management summary of a bunch of 3 ongoing GTS projects from July 2017. The table listed the projects and determined their size and status – GREEN, if everything

went as it should, YELLOW – in case the project experienced some minor difficulties, and RED – saying the project was in deep troubles. Consequntly, a brief description of current activities was provided. On the left, a performance development was stated. In case of Bremerhaven, in July 2017, the past, current and trending status was still positive. Therefore, the turnover plan was expected to rise according to the chart in the upper right corner. Due to the positive status, the pie chart of the total service level agreements (SLA) reveiled that all agreements had been succesfully reached so far. The total SLC below showed that logically no finantial compensations were issued towards the consulting company. Such a simple presentations taking place every two weeks kept the client on track.:

Figure 11 – Management summary of the project



Source: Issued by the author based on the project internal data

Although the planning seemed to be carried out properly at first glance, the project run into deep troubles during the testing phase. As the implementation required a lot of customizing – non-standard coding within the system – lots of issues and errors appeared after first tests. To keep up with the deadlines that had been endangered by the necessary fixing of errors, the consulting company decided to replace some consultants for more skilled and experienced ones.

This action unexpectedly exposed a major issue that was brought about during the design phase of the project, and probably caused the high number of errors in the system that were not detected until the testing phase. The new coming consultants found out that they could not clearly and smoothly understand the project processes and their issues. No matter how experienced they were, the poor documentation of the design phase did not allow them to quickly dive into the project and solve the problems. In other words, the initial consultants did not documented properly the content of work that was needed to carry out. The confusion and mess were intensified together with the high number of non-SAP standard processes and functionalities. Eventually, the partially new team managed to turn the project from red status to green. The thorough analysis of problems with the system enabled better control over the problem solving processes, as well as it helped to estimate a delay in completion of the implementation. The appendix *8.3 Testing process overview* shows the analysis of test cases that were tracked by consultants on daily basis. The visual illustration through a graph and the percentage calculations enabled a better forecast of the finalization of the project. Eventually, the major complication caused by the poor design and confusion brought about by change of the team members resulted in a almost 4-month delay in go-live.

In comparison to the previous two cases, the GTS system implementation in Bremerhaven project contained good and bad decision. As a result, the implementation did not end so successfully as planned; however, it cannot be marked as a failure. The initial planning and top management commitment cannot be seen as a underestimated or wrongly applied. As the only weakness might be considered the favor of the client towards the consulting company. The fact that the consulting company had already successfully implemented several systems for the car manufacturer could not entirely mean that it would install this system automatically as well as the previous ones. From this point of view, a more deliberate tendering process could have been considered.

The communication between the project and the top management was structured and organized well. Regular meetings and reports assured the management had a clear vision what was going on. The problem rested in the communication within the team, maybe even among individual members of the team, and the project management. The design phase and documentation process were highly underestimated and neglected as for the quality.

Even if some members of the team had not been replaced, system issues would have appeared during maintenance and testing. Therefore, the project management can be blamed for the problems, as its responsibility was to monitor and control the quality of implementation processes. An unfortunate decision was to replace also one of the project managers. The new PM, who was supposed to take a lead of the project, was logically confused like the rest of the new consultants, which undoubtedly slowed down the problem-solving process as well.

The replacement of the consultants may be perceived as a good decision. Their adaptation to the project took valuable time, nevertheless, they managed to handle the difficulties as soon as possible and prevent the project from absolute failure. The consequences would have been probably much worse, if the team had remained in an original composition. An important personal finding was that even a couple of skilled people from the whole team consisted of more than 20 people were able to save the situation and bring the project to the relatively successful end. The presence of the car company employees during the implementation played important role too. They represented a significant part of the project team and provided the external consultants with valuable knowledge of specific processes of the company. In case of implementing a huge amount of non-SAP standard functions, this guidance is crucial for successful outcome.

The Bremerhaven project proved that the partial failures within the project team or project management do not cause as radical consequences as wrong decisions done by the top management. The shortages in this project turned up to be on much lower level than in case of Hershey Company case. Furthermore, the scale of the project influences the possible negative consequences as well. The delay in implementation of one submodule does not have obviously as big impact on the costs, profit loss or functioning of the company as a delay in global implementation of all ERP modules.

5 Conclusion & Recommendations

The theoretical review of existing researches and works exposed several factors influencing the ES implementation in major way from the managerial point of view. However, the level of influence by an individual factor is, according to the theory, always dependent on a particular case. The practical research of the thesis proved the mentioned success factors of the implementation immensely affect the process of IT system installation; nevertheless, the influencing factors are, in fact, only managerial tools. Furthermore, the researches usually do not determine what kind of tool should be ideally used by what level of management. Among the greatest tools belong the stakeholder assessment, change management, or project management; all of them have two fundamental denominators – commitment and communication.

The analyses of the three implementation cases found out that a company has to always focus more on strategy, people and preparedness than on the costs and profits before deciding to apply an ES. Although the influencing factors might be equally important, top management has the greatest power to utilize the mentioned tools towards the successful implementation. The higher level of managerial decision within the implementation, the more radical consequences for the company functioning. Rushed process, underestimated risks, badly informed and unskilled people resulted in heavy failure in Hershey Company system implementation. The failure of the implementation caused by Hershey's top management decision-making affected the functioning of the enterprise mainly in a significant profit loss, decrease in the customer trust and loss of the market share. On the other hand, deliberation, commitment and unity brought the project to a great success in Elf Atochem. The organization registered enhancement of the customer service even before the end of the implementation project. The scattered business units were successfully integrated and the flow of information throughout the company became much more efficient.

The third case is based on the author's personal project experience and research carried out through the consultations with the project team members and project lead. The personal perception truly confirmed how important the communication is. Although the top management did a good job with initial preparation, evaluation and planning, the project got into deep troubles due to the underestimated documentation of operational and technical processes. The blame lied on a couple of inexperienced consultants and bad communication

and controlling of the project management. Eventually, the issues were fixed quickly by simple replacement of part of the project team. The consequences did not have a major impact, as the problems originated on the low project level activities.

In conclusion, two suggestions can be mentioned for improvement of the system implementation process management based on the findings obtained in the practical section. The theoretical researches often rank commitment as one of the critical success factors of ES installation. A component of the commitment is undoubtedly motivation, which was not covered in any of the reviewed sources. In case the project management and project team are not motivated enough to help the client reach desired outcome, the project managers should find firstly their motivation by themselves and then try to transmit it on the rest of the team. Motivation can be seen as an essential source for the commitment and cannot be omitted or underestimated by management.

The second recommendation relates closely to the mentioned communication. The theory, and also reality, put the emphasis mainly on the communication between the executives and project management, possibly between the executives and employees. The personal observation during the project discovered a lack of the listening to the opinions of consultants by the project management. The hierarchy levels are noticeable during the project and even though the communication works well, it is usually shallow and very formal. More open and proactive communication, or rather questioning of skilled people would bring number of useful insights and tips that could be utilized by project management for more efficient leadership and decision-making. The truth is that management never understands all the ongoing processes; therefore, it should make more use of the experienced people in its team.

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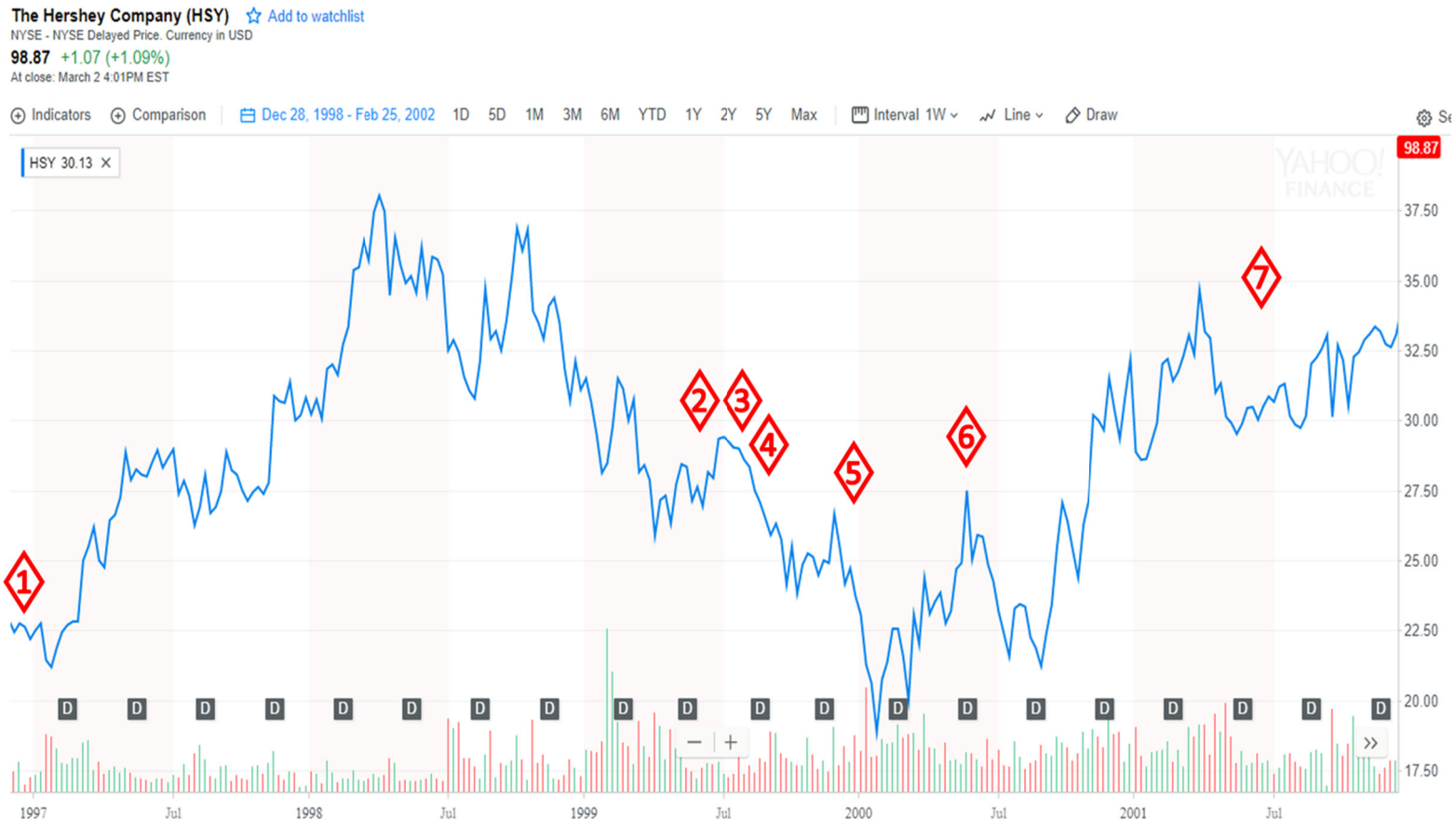
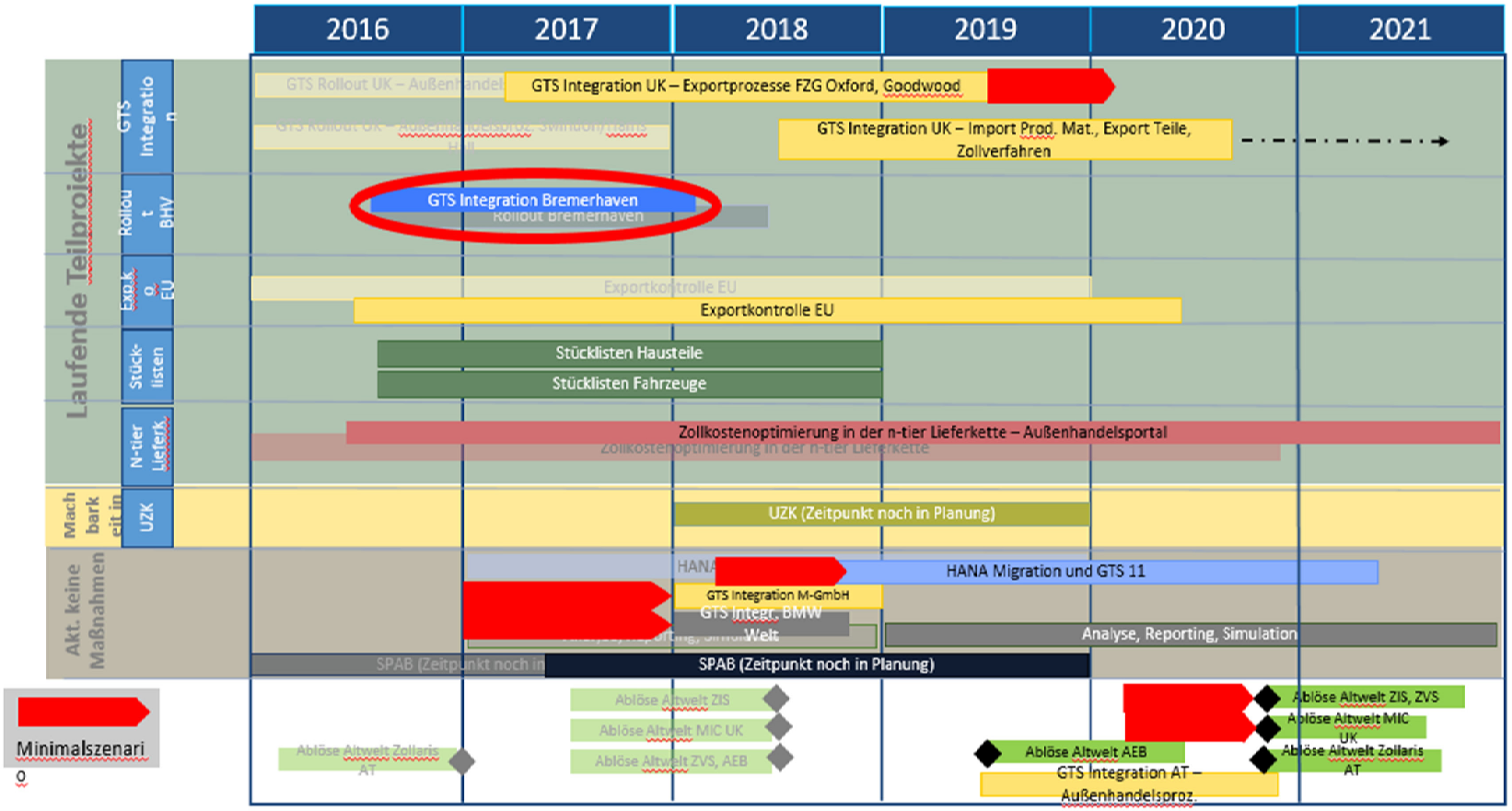
7 Appendices

7.1 Hershey's stock value timeline



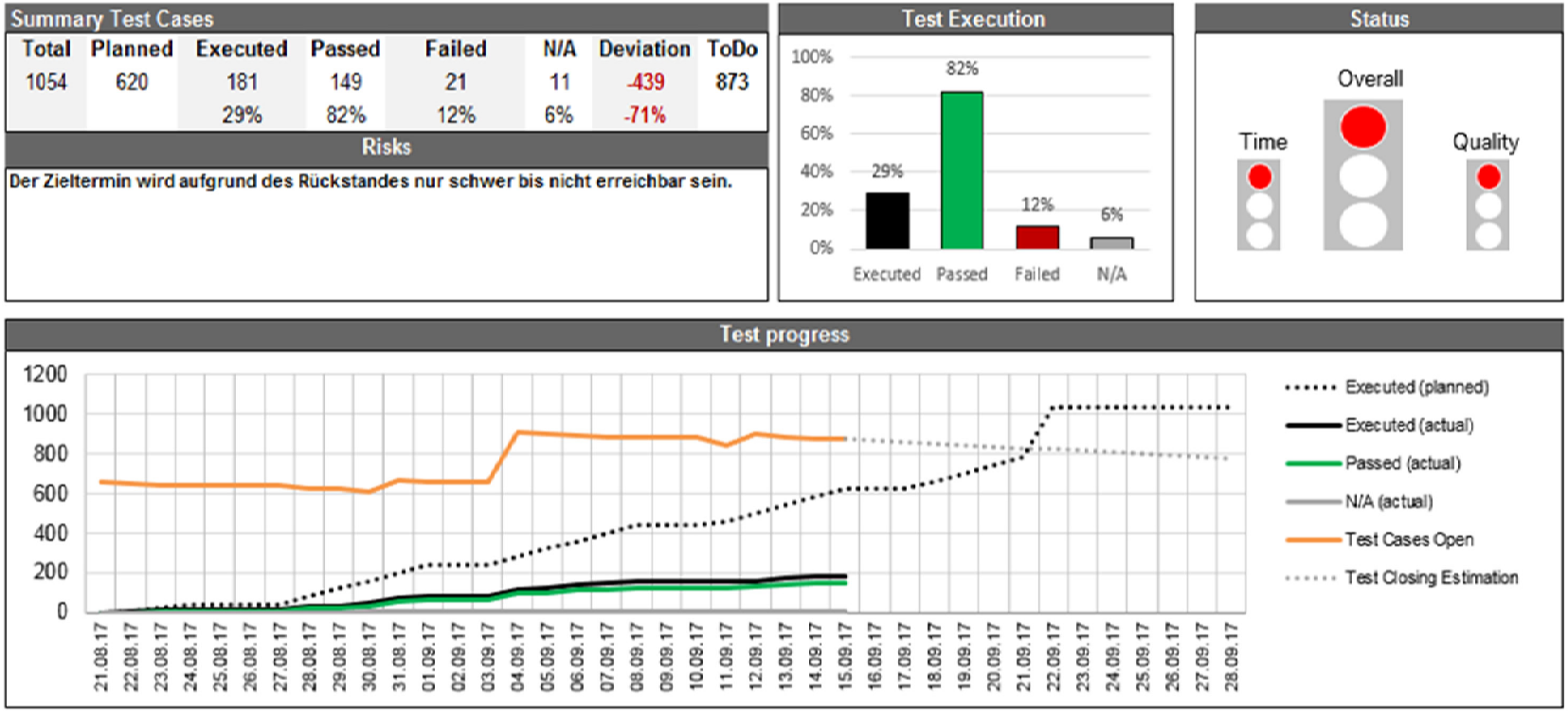
Source: The Hershey Company. (2018). Retrieved on 04.03.18 from: https://finance.yahoo.com/quote/HSY?p=HSY

7.2 GTS projects implementation timeline



Source: Issued by the author based on the project internal data

7.3 Testing process overview



Source: Issued by the author based on the project internal data