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Optimising of ERP System Support

A business process towards a more efficient working on requests
from ERP system users

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This thesis focuses on improving and optimising the process of the support system for Enterprise Resource Planning system users in the case company to overcome the various negative consequences and to avoid potential risks for business. The case company is a large company that provides outsourcing services in the field of accounting, taxation and business consulting. The scope of the thesis covers a part of a real project being carried out that focuses on improving the IT support of the whole company.

The research process was designed to follow a common approach that is used for action research: a step-by-step process from problem identification, through current state analysis and comparable practices to creating the concept of the new proposal, pilot testing and evaluation. Advantageously, the thesis was based on qualitative data, but it also contains an analysis of some key quantitative data, for example, productivity and profitability data for successful implementation and usage of the Enterprise Resource Planning system. The theoretical framework was built on literature reviews and analysis of best practices regarding approaches to business process improvement, IT management and support.

The proposed improved business process was evaluated by the participants of the project during a feedback session. Moreover, interviews were conducted with stakeholders and the end users of the Enterprise Resource Planning system. The results from the review session indicated that many of the process stakeholders were satisfied with the proposed options for improvements. However, the results also indicated that many process related things needed to be developed.

The outcome of this study culminated in the improved process, which takes into account the company context, as well as in specific directions for the further development and implementation of this proposed process. The author recommends that management of the case company uses the suggestions received during the feedback session as a base for further project steps and implementation of the improved process.

| Keywords | business process improvement, ERP system, IT support, IT management, procedures |

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1 Introduction

The topic of this study was chosen based on author's fields of interest: ERP-systems, business processes improvement and automatization, as well as on existing problem that the author faces in every day work life. The thesis covers a part of the real project being carried out in the case company that focuses on improving of IT support processes. In this relation, the topic has more practical direction than theoretical and seems to be relevant and useful.

In this first chapter, the case company (that will not be named) is briefly introduced, after that the business (research) problem is presented and expected findings and intended outcome will be summarized.

1.1 Company context

The case company (hereinafter – the company, the case company) is a quite large company that provides outsourcing services in the field of accounting, tax and business consulting. Features of the company's structure is that it is a part of the large Group (hereinafter – the Group) and company's key customers are the corporate parent company as well as other subsidiaries of the Group. In this context, the case company is heavy dependent on the business of the parent company.

The case company provides different services to the Group's companies, which, in particular, include accounting services, financial statements preparation, legal and tax consultancy services. The company also defines principal methodological positions on different issues in accounting and taxation. These decisions are to be agreed with the parent company.

The biggest department of the company is the Accounting department, which currently has about 600 employees for all the separate divisions of the company. Such significant number of accountants is needed because the company keeps financial and managerial accounting records for more than 20 large companies of the Group. The case company uses several Enterprise Resource Planning (ERP) systems for operational accounting, however, for the majority of customers, accounting records are maintained in SAP ERP.

The author of this thesis has worked for the Tax methodology department of the company for over 2,5 years, first as a Lead Specialist, then as an Senior Specialist, and currently she acts as Head of Department.

In relation to the topic of this paper, it is worth noting the following important aspects: external factors and internal factors of company context.

Firstly, as for external company context which is relevant to the topic of this thesis, it is worth to highlight:

- mostly non-price competition in the market;
- automation and standardization of all business processes trends in the industry and in large companies as well;
- the quality of services depends on the ERP system efficiency and timely users support directly.

Secondly, as for internal factors the most important aspects regarding the topic include the following:

- IT structure: the Company has its own IT department (help with current technical issues) and external IT contractors (complex issues and ERP-system support);
- corporate regulation in IT field: high data security standards, limited access to the corporate data;
- project value: high costs of ERP-system implementation and appropriate consultancy were incurred up to this moment.

1.2 Business problem and intended outcome

The current business problem is related to the user support for the SAP system. IN particular, the change request process is currently problematic in the case company context. This process is the focus of the current development work described in this thesis.

At the moment the following situation with change requests takes place in the company. Change requests come to the IT support department from the employees of finan-

cial and accounting departments. At the same time, the requests are different in nature. For instance, they can be related to:

- technical errors in current transactions and operations;
- the need to change the system settings or create new functionality;
- various technical issues (access rights);
- other problems.

Thus, the IT support department, in addition to its direct duties, is forced to make a classification of change requests received and forward them to the corresponding units, in particular: to the ERP system support contractors, methodological (tax and accounting solutions) department for approval and so on. Moreover, some change requests come directly to mentioned above departments as well. Thus, a clear process for making changes to the ERP system is not developed and the communication regarding this issue is broken.

The issues mentioned above can lead to delays in the monthly financial closure of the customers' accounts, financial statement delivery, increase in the operational costs, increase in the risk of poor quality of financial deliverables and risk of data loss, and sometimes even to violation of an agreement conditions with customers. Given this, the objective of this study is to find out a suitable proposal for an improved user support process for the SAP ERP system which can handle the situations described above and use the relevant best practices.

The output of this thesis will be improved SAP ERP-system users support process suitable for the case company's internal standards. Further, this improved process will be piloted by the employees involved in the process. This thesis output could help the SAP ERP users, IT support team within the organisation to interact more effectively, to avoid the issues discussed above and handle those situations in a better way.

1.3 Limitations & Scope

The scope of this thesis is limited to the case company described in the introduction section 1.1. Within the case company, the scope covers a part of a current project being carried out that focuses on improving the IT support of the whole company. The planned duration of the project is 3 years. It was launched in January 2015. The current

thesis, however, focuses on a much narrower process, which is directly related to the author's daily work.

The aim of this research is not to create the author's own process separated from the project, but rather adapt good ideas from the existing methodologies, analyse the achievements of the current project, represent and substantiate the improved user support process of the ERP system users' support, "detached" from the overall IT support process, which are suitable for the business process under discussion within the context of the case company.

Due to the fact that this research bases on the real project, it has to correlate with the existing project plan, which differs from the master thesis plan. In this regard, this thesis focuses only on the first stage of the project, mainly, on preparation of the proposal for process improvement. The further pilot testing of the whole process and its implementation in operation are out of scope.

As for limitations, the most significant one is a limited access to information on the project due to the company's confidentiality policy. This makes it difficult to assess the full picture of the project as well as an explanation and justification of decisions made on the project. Information about the project is available only within the working competence of the author as a project participant.

Moreover, due to the large scale of the project, the author takes part in the review of proposed decisions only in terms of tax methodology and cannot influence the decision on the project out of its working competence. With regard to other project areas the author of this thesis is only an observer.

It also should be emphasized that the thesis is focused only on the user support process of the ERP system, while the project realized in the case company deals with the IT support process as a whole. In this regard, all stages of the project are considered in this thesis in a narrower form, only in their correspondence with user support process of the ERP system.

Specifically the main deliverable of the thesis is the improved user support process of the ERP system. The improved process will include an overview of the new process itself including process inputs, process activities, and process outputs. The new pro-

cess will also detail the process stakeholders, the process participants as well as directions for further continuous process improvement.

2   Research Approach

2.1   Research process overview

The research process is designed to follow common approach that is used for action research: a step by step process from problem identification, through current state analysis and comparable practices to the creating the concept of new proposal and pilot and repeating if/when necessary.

The topic for the master's thesis was chosen due to the personal interests within the case company and job responsibilities the author performs as well as some knowledge acquired and some challenges faced during the work.

The research starts with describing the business problem and intended outcome. This will be followed by the current state analysis regarding current ERP-system change requests handling process. The main purpose of the current state analysis is to determine reasons for the needed improvements in the current situation with ERP-system change requests processing. It includes analysis of the process impact on the business as a whole, the review of corporate standards and IT policies and SWOT-analysis.

The current state analysis is followed by a literature review in order to understand how similar business problems have been handled using the existing literature. This includes the definition of the critical success factors, the best industry practices regarding ERP support. As a result, requirements and limitations for the new process will be determined.

Accordingly, both the current state analysis and literature review are used together to create the new process model, which is further will be developed and proposed for standardization. Finally, new process model will be pilot tested and feedbacks and final proposition will be collected from concerned stakeholders in the company for further improvements.

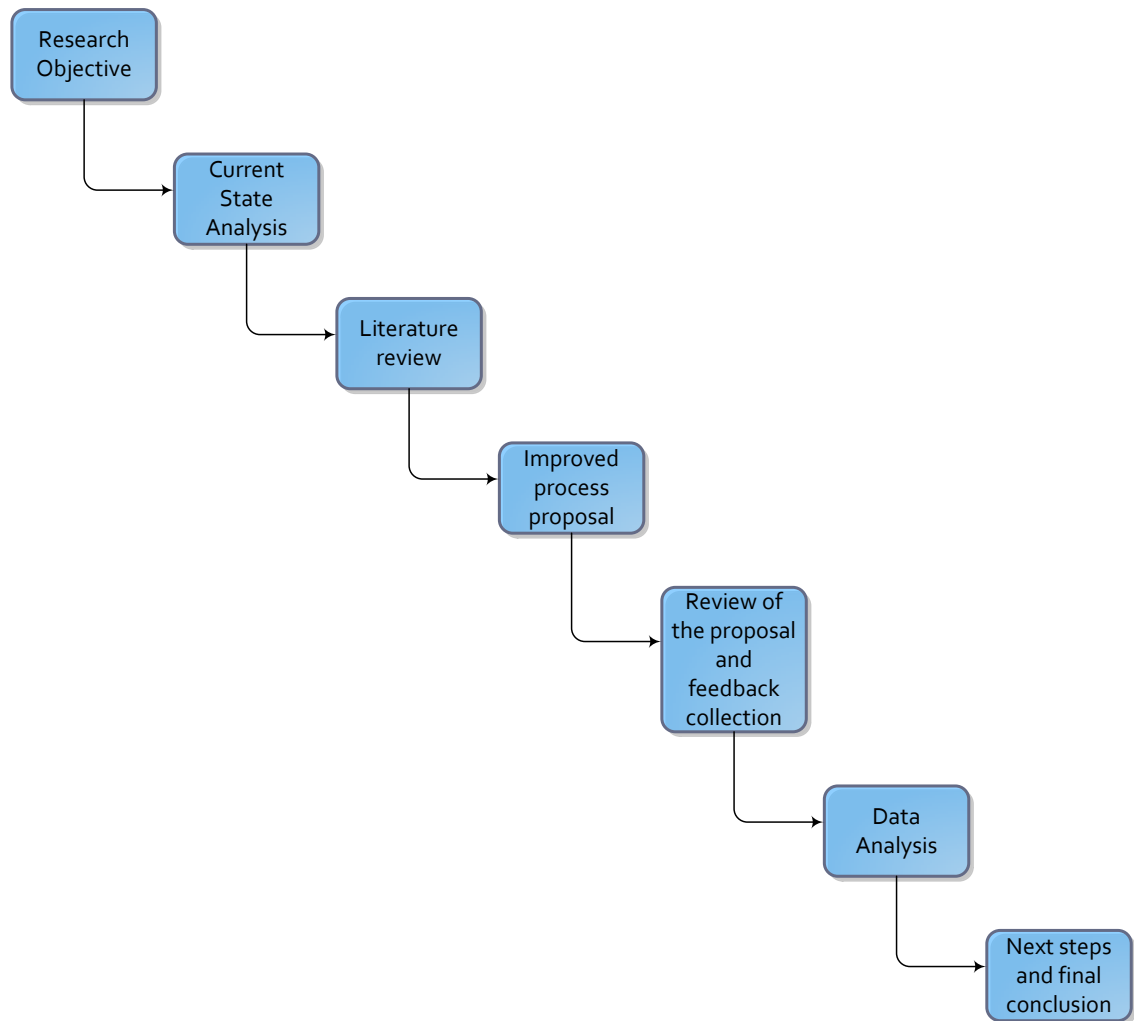The research design implemented in this thesis is illustrated in Figure 1.**Figure 1**

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┌──────────┐
│ Research │
│Objective │
└────┬─────┘
     │   ┌──────────┐
     └──▶│ Current  │
         │  State   │
         │ Analysis │
         └────┬─────┘
              │   ┌──────────┐
              └──▶│Literature│
                  │  review  │
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                       └──▶│ Improved │
                           │ process  │
                           │ proposal │
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                                └──▶│Review of │
                                    │the proposal│
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                                                  └──▶│Next steps│
                                                      │and final │
                                                      │conclusion│
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Figure 1 Research design

2.2 Data collection and data analysis

The data collection was initially started quite soon after identifying the business prob-
lem, setting the targets and defining the scope. During the current state analysis, it was
possible to obtain a more thorough data and material collection about the different as-
pects of the current situation with the change request (CR) handling process in the
ERP system. These data and materials include:

1. The policy in the field of IT;
2. The principles of creating and deploying the Template of financial processes
    based on SAP ERP;
3. Materials from external consultants;

    4. Internal statistical data and reports.

A significant part of the information for the conceptual framework (IT project aspects, existing project management and for IT support concepts, success factors) have been collected from the different sources through the Internet from SAP professional websites, from academic and industry literature and from people from the case company who have been interviewed.

Both qualitative and quantitative research methodology were utilized in this study. Advantageously, the Thesis is based on qualitative data, but it also contains an analysis of some key quantitative data, for example, productivity and profitability data for successful implementation and usage of ERP-system. The quantitative research data was gathered, primarily, from industrial journals and internal reports and publicly available statistics data.

The qualitative research data were obtained from interviews within the case company, internal reports and professional literature. Expert interviews were conducted with the senior manager involved in the SAP implementation project, lead specialists, involved in current ERP system change requests processing from following departments: Accounting, Tax Methodology and IT Help desks. These people are same who has participated result review session. Information collected was used for studying the possibility to improve the current situation with ERP-system change requests processing, to design framework of the proposal regarding the process and to obtain the objective of this study.

3   Current State Analysis

The Current State Analysis (CSA) or As-is analysis (Business Analyst Learnings, 2013) and situation analysis, is the first step of any corporate transformation. Moreover, the CSA is an assessment of the true state of the business and an in-depth analysis of the root causes responsible for the company's current situation. The purpose of the CSA is to create a basis for further steps in the direction of the desired results.

In relation to optimising the ERP system support, the four following steps of the CSA are performed.

3.1   Analysis of the impact of the ERP system change requests handling process on the Company's business as a whole

Firstly, it is needed to consider the main participants of the ERP system change requests handling process (the process). The process affects the work, at least, of three different departments of the case company, which in turn can be considered as the participants of the process:

- ERP-systems user's departments;
- IT support department;
- Department of the solution approval.

It is also worth considering the "clients" of the process. They include the ERP systems user's department as well as an end customer, because it affects the company's ability to provide quality outsourcing services in the field of accounting. In this regard, the process should be considered as a business process, which:

- creates added value to the services;
- creates the services itself, representing the value to the external customer;
- has direct purpose: to generate revenue.

Internal departments are the clients of the process as well. In this relation, the process supports the infrastructure of the organization, which is represented by the ERP system in this case.

Thus, although the clients of this process are represented also by internal departments, it is directly involved in the implementation of the business lines of the company. Consequently, it can be considered, on the one hand, as primarily business process, on the other hand, as supporting (secondary) business process as well.

The financial consequences of the ERP-system failure include:

- the costs of recovery of lost data and performance IT systems;
- recovery time costs;
- costs of negotiations with affected stakeholders;
- replacement of key automated processes by manual operations;
- untimely inputs of accountings data in the system.

In turn, these consequences lead to untimely reporting and provision of financial statements to the client, which is the direct disruption of contractual obligations.

Operational work and the development of the ERP system, including efficient working on change requests from the ERP-system users, as well as business processes automation as a whole, are the key factors for a successful operation of the case company. This business processes automation can be classified as technological factor, which has a direct impact on the quality and efficiency of service delivery.

3.2   Corporate Standards and IT policies

The Corporate standards regarding ERP-system consist of:

1. The policy in the field of information technologies (hereinafter – the Policy):

Firstly, it is worth to note that the Policy has been being valid in the company since 2007. So, the Policy probably does not take into account modern trends. Therefore, it requires a revision due to changes in technology and trends.

The Policy discloses objectives, principles and stakeholders regarding the usage of different information technologies in the company. It defines the informational technologies (hereinafter – IT) as a set of programs, computing resources (computers and servers), telecommunications, created and used in the company's activities, as well as IT project management processes, user requests, data security.

The policy applies, in particular, to the following areas:

- Management of software and licenses used in the company;
- Management of information security;
- Management of IT projects;
- Management of incidents.

In this relation, the Policy applies to the usage of ERP systems and related supporting processes as well.

The Policy defines stakeholders regarding IT as:

- shareholders and potential investors;
- managers and employees of the company and its subsidiaries;
- the company's contractors.

The Policy aims at improving efficiency through the following:

- standardization of the functions performance in the information systems;
- unification of input and processing of data regulations ;
- speed of information processing and accuracy by eliminating paper work and minimize the human factor.

The Policy states also that the construction of an effective management system with the use of modern IT has an impact on the corporate culture, economic efficiency and capitalization of the company as well as the relationship with contractors.

Thus, although the Policy applies to the ERP systems, it does not specify particular methods of work with the ERP systems or technical support service. The policy contains only the general principles of use IT in the company.

2. The principles of creating and deploying the Template of financial processes based on SAP ERP (hereinafter – The Principles)

This document has been created and implemented in 2009, when the company carried out a project to deploy the SAP ERP-system. The Principles describe the basic principles of the creation and deployment of the Template SAP solution.

The Template (template solutions) is a set of descriptions of business processes and associated master data, reference data, analytics and reporting forms (process part of the Template) and their partial or full implementation in the ERP-systems (the technical part of the template).

The objectives of this document are the following:

- Description of the principles of creating a SAP solutions based on the Template;
- Description of the Template elements;
- Implementation of the Template using the software SAP Solution Manager;
- Description of the principles of the Template deployment;
- Deployment of the Template using the software SAP Solution Manager.

Template Management is one of the key components of the template solution. The document contains basic principles of Template Management structures, which is also important for the building of the technical support process.

For legitimacy and improving the quality purposes, the Template organizational management structure adapted to take into account the impact of changes emanating from cooperating structures and from the top management the Company. The Figure 2 illustrates the structure.
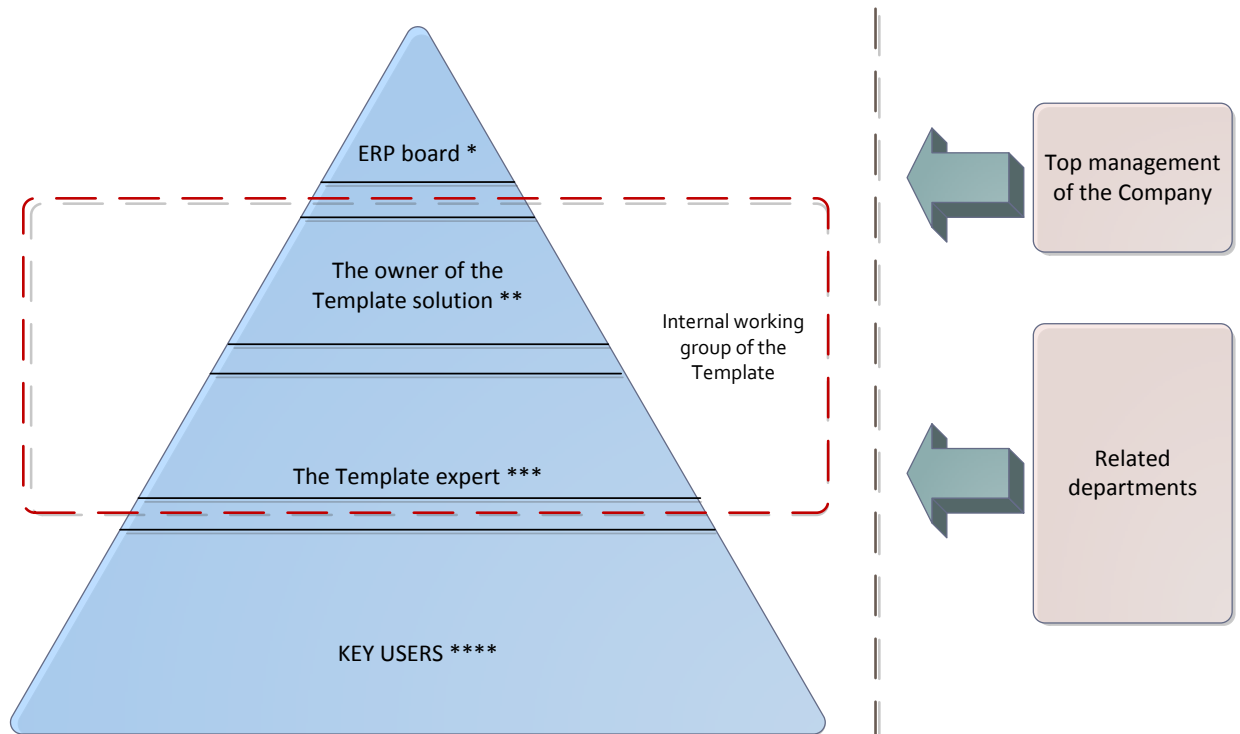
Figure 2 Template Management Structure

*ERP Board - a collegial body, represented by the competent representatives of the various function blocks which:

- **coordinates of business, IT and ERP strategy;**
- **Assesses and coordinates project initiatives;**
- **Manages Project milestones and process conflicts;**

**The owner of the template solution - an employee of the Company owning the entire volume of the business process described and implemented in the decision.

***The Template expert - an employee of the Company, which the functions of design, formalization, coordination the need to change the descriptions of business processes and their implementation in the SAP are delegated by the owner of template solution.

****Key User - responsible employee of the Company, which is in charge for execution of the final accounting operations in accordance with his / her official duties and using the Template solution.

As seen from the above, these policies cover the general issues of the information systems in the Company, as well as the basic principles of implementation the Template for automation of financial processes.

It is stated in the section "Template Management" of the Principles, that the process of working on change requests regarding SAP ERP system is a Template Management component. This Process should provide timely reflection of the business processes changes in the process-technical part of the Template solutions and monitor their compliance. The change management process should be designed to:

- ensure the integrity of the Template;
- improve the effectiveness of the Template;
- build a system of continuous administration of the Template.

However, although, there is a mention about the Process in a section "Template Management" of the Principles, the Process itself has not been developed and established on the corporate level yet.

Thus, the business process of working on change requests from SAP ERP system users is the independent and important process that requires precise regulation.

3.3   Current ERP-system change requests handling process chart

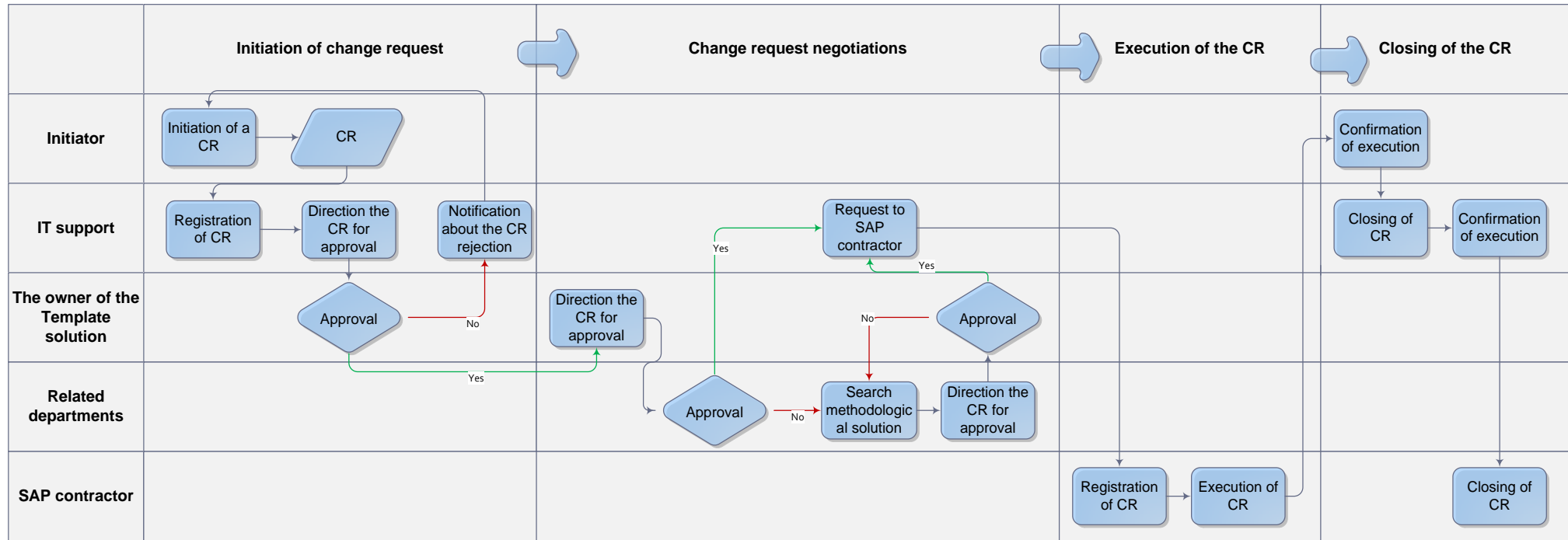In the Figure 3 below the current ERP system change request handling process is shown schematically.

Figure 3 Current ERP system change requests (CR) handling process chart

This attempt to visualize the current situation of ERP system users and ERP system support interaction shows, that main negotiations and approvals regarding the change request occur without participation of the user, on the owner of Template solution and related departments levels.

However, the current ERP system change requests handling process actually is not established. Parties of this interaction try to act according the Policy and Principles, but any other corporate regulations are not applied to this process.

The main advantages and disadvantages of such interaction are considered through SWOT analysis.

3.4   SWOT analysis: current ERP-system change requests handling process

SWOT analysis is represented below in the Table 1:

Table 1 SWOT analysis

Strengths	Weaknesses
The basic principles of the creation and deployment of the Template SAP solution are defined.	Current ERP system change requests process is not established.
The Template organizational management structure is defined and is in place.	Roles and responsibilities are not agreed in detailed level.
The Template service team is created within the technical support department.	The processing time for CR is not defined.
Not documented and officially established process exists.	Technical support team is overloaded due to the fact that requests approval occurs later.
Related methodological departments take part in CR approval process.	CR processing has heavy dependency on external SAP contractors.
Opportunities	**Threats**
To develop internal SAP Template service function.	To establish ineffective process.
To reduce the CR processing period.	Limited resources to do process development works.
To minimize costs of recovery of lost data and performance IT systems.	To increase bureaucracy of the process.
To minimize manual inputs of accounting data	High costs of improvements without guaran-

and related errors in financial statements.	teed result.
To improve the quality of services.	Rejection of improvements and changes by involved personal.
	A lot of time and resources for adaptation and testing of the new process are needed.

Defined strengths can be used to determine the basic framework for the new change requests handling process. They show that the some steps in the direction to the new process have been already taken.

Weaknesses provide important information about key priorities to improve current situation and establish effective interaction between ERP system users and ERP support team on all levels.

Opportunities and Threats as external factors present the positive and negative sites of the new process creation taking into account company's current conditions and basis.

4 Project basics and key factors

After the current state analysis it is worth to define principal aspects for optimization of ERP-system support process. Firstly, some theoretical framework as well as critical success factors (CSFs) will be investigated. The theoretical framework will be followed by review of existing approaches and best practices regarding organizational aspects of IT-support. These findings as well as data collected, in particular, from interviews will help to formulate the significant requirements and important limitations for the design of the new process. As a result, foundation for the new process will be defined.

4.1 Review of existing methods of business process improvement (BPI).

There are various methods for carrying out business process improvement (BPI). According to literature reviewed the most widely used approaches in practice include the following:

1. Six sigma;
2. Benchmarking;
3. Process mapping.
4. Business process reengineering.

The first method of the BPI – six sigma – is statistically oriented. However, it is not a collection of statistical tools and metrics. According to Samia, Siha and Saad (2008), six sigma method include five phases:

- define and quantify the problem;
- measure performance and determine defect levels;
- analyse data and perform root case analysis;
- improve the number of defects;
- control the process to insure improvements are sustained.

Samia, Siha and Saad (2008) conducted the study and found that despite of all the opportunities of six sigma programs and its great success reported by several companies like GE, Motorola and Allied Signal; many other companies are dissatisfied with the results from their six sigma projects. Velocci (2002) related this to the lack of direct impact on customer (user), failing to involve both suppliers and customers (user), need

of linkage to overall business objectives, in addition to viewing six sigma as just a tool and not as a complete PI approach.

Another BPI method is benchmarking. According to Watson (1993), benchmarking is the process of continuously measuring and comparing one's business processes against comparable processes in leading organizations to obtain information that will help the organization identify and implement improvements. Briefly, benchmarking involves the comparison between the organization and the best practice. In order to benchmarks the best practice, a company, as a rule, performs a one-dimensional gap-analysis to determine the difference between the two.

Samia, Siha and Saad (2008) noticed that regardless of the tools and scope used in benchmarking, it has been accused of its limitation to ambition, since the aspiration is to be as good as the best in industry. Even the definition of the best in industry is not clear since the best this year may not be the best next year. Nevertheless, many companies attributed a great deal of improvement in their processes to benchmarking.

In comparison with the mentioned above methods, process mapping offers to their users visual expression to process improvement and provides a tool for analysing the process. Process mapping is not data flow diagrams or flowcharts. According to Samia, Siha and Saad (2008), it is a framework that shows relationships between the activities, people, data and objectives. There are two types of process mapping: value-added process map, and cross-functional map or process interaction map. The first one checks whether the various activities add value to the process, or not. The second shows the activities done by various functions and their interactions (Savory and Olson, 2001).

Process mapping could show control breakdowns, bottlenecks, unproductive utilization of resources, redundant steps; non-value added activities and root causes of problems (Savory and Olson, 2001). However, it is noticed that process mapping may not be adequate for addressing cultural and political issues when dealing with human activity systems, as Biazzo (2002) indicated.

The last method from the list above is business process reengineering (BPR). Hammer and Champy (1993) defined reengineering as "The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures such as cost, quality, service, and speed." As Samia, Siha and Saad

(2008) noticed, reengineering is different from most other PI approaches because it does not focus on what is, but rather on what should be. It does not seek to alter or fix existing processes; yet, it forces companies to ask, whether or not a process is necessary, and then seeks to find a better way to do it.

Reengineering starts with a high-level assessment of the organization's mission, strategic goals, and users or customer needs. Basic questions are asked, such as "Does our mission need to be redefined? Are our strategic goals aligned with our mission? Who are our customers?" An organization may find that it is operating on questionable assumptions, particularly in terms of the wants and needs of its customers. Only after the organization rethinks what it should be doing, does it go on to decide how best to do it (Business Process Re-engineering Assessment Guide, 1997).

Usually reengineering focuses on business processes – the steps and procedures that govern how resources are used to create products and services that meet the needs of particular customers or markets. As a structured ordering of work steps across time and place, a business process can be decomposed into specific activities, measured, modelled, and improved. It can also be completely redesigned or eliminated altogether. (Business Process Re-engineering Assessment Guide, 1997).

Given the above, this paper focuses exactly on business process improvement, which combines reengineering approach and process mapping. The BPR is the most suitable in business process development case and better correlates with the objective of the study: to develop a new process of ERP user support that will optimize request processing performance and reduce the cost of the related services. In its turn, the process mapping allows to extract and put in order the benefits from the current ERP system change request handling process to introduce the new "improved" process. Combination of these two methods calls also continuous process improvement or model CPI.

Information technology (IT) has historically played an important role in the reengineering concept. However, this thesis focuses on IT support process itself. In this relation, it is worth to identify CSFs for business processes re-engineering would be relevant to IT projects.

4.2   Success factors of Business Process Improvement: IT-support aspects.

Business Process improvement is complex task, and needs to be checked against several success/failure factors to ensure successful realisation, as well as to avoid improvement pitfalls.

In order to identify critical success factors (CSFs) for the process improvement project, it is needed to determine what successful project is. According to Stanciu and Tinca (2013), a successful project provides all the functionalities initially stated, can be used as intended, meeting planned goals, being operational at the specified time and within the approved budget.

As for success of IT support improvement project, in the framework of the case company it can be described like implementation of efficient and cost-effective IT support process for ERP system users, which is closely aligned with and tied to the corporate strategy and business vision of the company.

The main common CSFs listed below, which can be applied to IT service business processes, are distilled from various articles and empirical research on CSFs for business process improvement (for example, Tan, Cater-Steel, Toleman, 2009):

- Top management: any project improvement efforts must be supported by top management. It should be effective, active and bear responsibility for the project.
- Financial resources: improvement of IT service processes requires significant financial resources. The project should have its own budget. Moreover, it is critical to take into account all potential risks related to such investments of money.
- Expertise and consultancy support: consultants often help to leverage the deep knowledge that they gather from their practical experience with a wide range of clients. It is important for consultants to play a supportive rather than controlling role.
- Successful projects of IT service processes improvement are based on best practices with some "customization" in the form of changes to the business processes. It ensures that resulting business process will meet the needs of the organization.
- Human resources: for implementation of IT support process, the factor of team composition and skills are particularly important. It is critical for the project to

use the right people for the right tasks. Moreover, the effect of the new "improved" process on the employees should not be neglected.

- Sustainability: it is not enough to be satisfied with initial result of IT support improvement; from just "a process improvement project" the company should move to continuous improvement of process management.

Among the many other factors that could affect the success of the project on improvement of business processes, the most common factors are mentioned. These CSF's should be taken into account to build successful concept of IT-support process improvement in the case Company.

4.3 Review of existing approaches and best practices to IT support

There are two main approaches to IT support organization and management: technological or "traditional" and IT Service Management (ITSM) which based on "Software as a Service" (SaaS) model.

4.3.1 Traditional approach to IT management and IT support

"Traditional" approach assumes that the task of the IT department is to create and support various kinds of systems, which are considered business as resources. If a resource fails to work, a user contacts specialist from the IT department to understand the situation and fix resource. Thus, under "traditional" approach, the IT department is engaged in the creation and maintenance of a set of resources and the processing of complaints from employees who use these resources at their discretion (in accordance with the job description). At the same time, the typical problems that can be solved by the IT department should be formulated in technical terms.

4.3.2 IT Service Management and SaaS model

Another approach of IT support management is based on SaaS (Software as a Service) concept, indicating the model of software distribution, in which a customer does not become the owner of the software, but has access to the necessary functionality (usually via a web interface and browser). In this case the customer does not bear the load of problems associated with the installation, maintenance, and upgrade of the software.

In relation to SaaS concept, IT support and other related IT services are often simply denoted by the common term "IT services" in the business environment. Generally, IT services support business processes of the client organization. For the end user of IT service it is not important, by what "mechanism" it is provided, that is, questions such as "what to do" and "in what way to do" are usually separated within the IT service. Moreover, IT services are often provided not just by one company to another, but also, for example, by the IT department of the organization to its other department, as in the company's case.

According Bobrovskiy (2007), many companies build work of their IT support department based on IT services model. In order to standardize the work of internal IT-support with other departments of the company a Service Level Agreement (SLA) or other similar internal regulations are often used. SLA, in particular, specifies the time of service provision, determines its users (people, hardware, software and etc.), their location, specifies the response time of IT support department on a request, and the response time of user – on services provided. It is important to formulate in advance level of IT services, determine the methods of its compliance monitoring and the rules of interaction.

A SLA is usually based on IT Service Management principles (ITSM). ITSM covers wide range of activities to plan, design, deliver, operate and control IT services provided to customers. In contrast to the traditional approach, ITSM recommends focusing on the customer and customer's needs, on services provided to the user, rather than on the information technologies themselves.

Briefly, the fundamental ITSM framework implies the following principles:

- Services are the core form of value provision to customers;
- Services have to meet the requirements of the customers;
- Products, generated by the project activity or purchased on the market, replenish the pool of IT department resources and are used in the future to provide IT services.

According to ITSM, IT services should be provided based on one of the models:

- Insourcing - usage specialized internal IT department for the provision of IT services;

- Outsourcing - the transfer of IT functions for execution to external specialized service organizations;
- Mixed model – a number of IT services are provided by internal IT department (insourcing), other IT services are provided by the external service organization (outsourcing).

According to ITSM concept, there should be a department in the organization that is a provider of IT services within the company and at the same time a customer for external suppliers of IT services. ITSM declares its functions and responsibilities.

An integral part of the ITSM process is a Service Desk - a division (in ITIL terms "function"), providing a common and single entry point for all requests from end users and a unified procedure for requests processing. The introduction of the ITSM process approach to the provision of IT services often begins with the introduction of Service Desk.

ITSM also defines a set of concepts and sets tasks for departments in the structure of IT management. This includes such areas as risk management, safety management, financial management and others.

If a company is able to formalize the services that it wants to receive from the IT department, the payment model "for services rendered" is possible. This approach allows a business owner to better understand what is happening in the IT department, how much it costs for business and why it costs so much. In addition, it provides the ability to constantly coordinate the activities of the IT department, controlling that the services provided meet the current requirements.

The IT Infrastructure Library (ITIL) is the series of documents which were created to facilitate the implementation of ITSM approach. The entire set of processes needed to ensure permanent high quality of IT services and increase user satisfaction. The process approach, used in the library, fully complies with the ISO 9000 series of standards. The process approach focuses on achieving the company goals, the analysis of key performance indicators (KPI), and on the resources and costs spent for the achievement of these goals.

4.3.3   ITSM best practices

Due to the fact that the case company operates on the Russian market, it seems rational to analyze the practice of implementing of ITSM principles in big Russian companies. It is worth noticing that the implementation of ITSM principles usually starts with formation of Service Desk department.

Alpha Bank became one of the pioneers in this relation. In 2000 there were several stages of the ITSM-project, which enabled to structure work of the IT department, set up the Service Desk and organize end-users support. This step, combined with coordination of project has contributed significantly to the growth of authority of the IT department among the staff and management of the bank. The focus of IT on the business objectives achievement became visible to the users. They marked professionalism and willingness to provide support.

A number of companies that use ITSM principles managed to reduce help desk department by eliminating duplicate functions. This experience is useful, but many IT managers are interested in keeping the staff and the level of investment in IT in general. In this relation, it is worth to consider the practical example of the trade company "Perekrestok", where reorganization of IT department work based on the ITSM principles enabled the structured growth and, at the particular stage, even obtaining additional investment in IT personnel. Business management doubts often connected not so much with the fact of their IT investments, as with the method of use of these investments and the level of return on them. Availability of developed principles of work organization (procedures, job and work instructions, etc.) allows to answer the question of who is doing what. As a result, it formed a whole picture of the involvement of IT staff and ways to ensure growth. This is especially important if there is a strategic growth objective of the business that requires adequate development of IT services. Investments in IT personnel are mutually beneficial goals, understandable for both business and IT (Pototskiy, Zhuravlev, 2014).

Great interest is the experience of the company "VimpelCom" (mobile operator Beeline), whose IT department managed not only to solve a number of problems in the field of IT support services organization, such as Service Desk, but also converted ITIL to an element of their work philosophy. As a result, the ITIL has become, to some extent, a kind of debate language on internal issues and the approach to the discussion of IT service problems. In the course of these discussions, taking into account the specifics

of the company principles set out in ITIL are detailed and rules, those have high practical value and combine both global and company's experience, are developed. Most importantly, ITIL became not only the way of organizing the internal workings of IT department, but also the approach in collaboration with management and personnel of various departments of the company – end customers and IT users. This approach allowed the company to identify and to work purposefully with the services provided by the IT department to its users and which affect the company's business processes. In addition, the approach contributed to the work organization of IT department employees responsible for interaction with the business units-customers. And this is an area where there are often the sources of many problems (Pototskiy, Zhuravlev, 2014).

The path traversed by many Russian companies in the past few years shows that ITSM finds the actual application among a wide range of customers, and their number is significantly increased with the expansion of the corporate use of information technologies. It is noteworthy that in contrast to other standards in the IT field, the use of ITIL® is not mandatory, as it happens, for example, with the standards of safety, or IT auditing standards. Nevertheless, ITIL® is becoming the de facto standard, and especially it is demanded by organizations in which information technologies are used to support the main production and business processes as in the case company (Pototskiy, Zhuravlev, 2014).

4.4   Conclusion and summary: new process requirements and limitations

After conducting of current state analysis and consideration of existing approaches to IT support projects, the requirements and limitations of the new process have been made clear.

The primary requirement for the new ERP system change request handling process is to have a mechanism by which users from key Company's departments are able to obtain access to the quality and timely help on ERP system issues which supports, in turn, the contractual reporting timetable and all associated deadlines to meet customer expectations.

The following aspects need to be incorporated into the final process:

- Functionality: support team (internal as well as external service providers) should understand the complexity and specificity of the system, have experience in dealing with similar problems.
- Service time limitation: each change request which is submitted through the process needs to be implemented in a maximum of 10 work days;
- Request tracking: the process needs to enable the tracking of the request and approval flow;
- ERP system availability limitation: the system should be available 24 hours per day. Proportion of the agreed service time should be no more than 2%.

The secondary requirement for the access management process is to have a process that gives value to the organization and contributes to overall corporate strategy. The following elements have been outlined as a part of the secondary requirement:

- The process should be simple and transparent;
- The process should eliminate unnecessary work across all user groups;
- The process should use automation to remove the element of human error from the implementation activities;
- The process should be cost effective;
- The process should provide high level of confidentiality and security of data.

In relation to the secondary group of requirements, it is needed that the new process will comply with existing corporate standards regarding IT: "The policy in the field of information technologies" and "The principles of creating and deploying the Template of financial processes based on SAP ERP".

5 Building a new ERP-system change requests handling process

5.1 Creating a new process concept

As mentioned above, the business process improvement in the case company combines reengineering approach and process mapping and means intensive, but continuous process improvement. In this relation, the following aspects can help to meet considered process requirements:

1. It seems reasonable to use the current process, existing in the company, as a base for the improved business process. This would facilitate understanding of the final the process by the employees directly involved in the interaction, reduce the cost and simplify the whole process improvement.

2. The alignment process in accordance with the ITSM principles will allow increasing quality of IT services not only in ERP-systems support field, but also quality of IT services as a whole related to all business processes of the company.

3. Usage of insourcing/outsourcing mixed model will help to comply with corporate security data policy, combine availability and knowledge of the business from the inside of internal IT department and experience of external providers.

Any business process consist of the sequence interrelated input and output functions. The function of the business process can generate work items of any nature (material, financial, information). The functions of the process can be defined as the following:

- Identification of the technical issue regarding ERP system;
- Description of the problem in the request;
- Sending of the request;
- Confirmation of receipt of the request by IT technicians;
- Elaboration of the solution by IT specialists;
- Approval of the elaborated solution by related business units;
- Implementation of the solution by IT specialists;
- Closing of the request.

It is worth to take into account the existing process of ERP system change request processing. Generally, business process improvement is achieved by changing the state

of particular elements of a business process. Parameters of element state after changing exceed ones before changing in a matter that the degree of organizational goals achievement increases, improving the efficiency of the business process.

The considered process includes the following core elements:

- Business roles: employees and business units, which perform actions and bear responsibility, presented by organizational assignments;
- Input data;
- Output data;
- Actions: in the course of activity (set of actions) input data is converted to output data;
- Resources and technologies: converting input data during an action is supported by different kinds of resources. For instance, document flow during the process can be supported by electronic documentation tool or other IT systems.

Following the concept of continuous process improvement, the implementation of the project is based on the PDCA cycle (Moen, Norman, 2011):

- Plan a change, aimed at improvement;
- Do – carry out the change (preferably on a small scale);
- Check the results and define, what went wrong.
- Act – adopt the change or abandon it, or run through the cycle again.

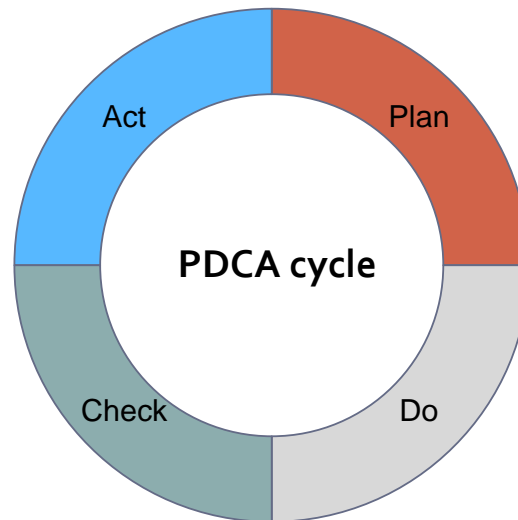The Figure 4 illustrates the PDCA cycle:

Figure 4 PDCA cycle

The concept of continuous process improvement assumes some repetitions of PDCA cycle to achieve desired result.

In relation to the PDCA cycle it is worth to remind that the improvement of the ERP system change request handling process is a small part of the global IT support enhancement project in the company. In this regard, the timing of implementation and the amount of PDCA cyclical repetitions for this small part is inextricably linked to the schedule and stages' results of the whole project. In this paper only the first PDCA cycle regarding the ERP system change request handling process is considered. It is expected that the improved process will be implemented in the second quarter 2017.

5.2   New process interaction with related business units

Speaking about the new process interaction with business units of the case company, it is worth to consider primarily the key roles involved in the process and related responsibilities:

- Initiator - a key user - an employee of the company, who has the right to initiate a change request. Usually, this employee is in charge for execution of the final accounting operations, using ERP system, in accordance with his / her official duties. In this relation, the right to initiate the change request should belong to the users from the following departments: financial department, accounting department, contract department.

- Administrator – a specialist, who registers of change requests regarding the Template and coordinates the Template change management process.

- The owner of the Template solution – a SAP EPR specialist, in charge for a specific functional module of SAP template solution.

- The Template expert – a SAP specialist with competence to evaluate SAP ERP system functionality solutions.

- Key experts – specialists from related departments that evaluate ERP system solutions on change requests in terms of specific areas: accounting, taxation, legislation. These related departments include: accounting methodology department, tax methodology department and law department. Experts are involved for approval of change request solution if it is required by particular request.

- Internal IT department – estimates a change request and participates in approval and the implementation processes.

- Contractor – the external organization that carries out the changes to the SAP ERP system. It includes the following actions:

  - preparation of technical solutions for the change request;
  - evaluation of the complexity of the changes implementation;
  - implementation of changes in SAP ERP system;
  - documentation of changes performed in accordance with the company's requirements;
  - provision of testing of the changes performed.

The abundance of roles in the process requires the establishment of clear instructions for each role, thoughtful terms of task execution and efficient process control system as a whole.

5.3   Prototype Proposal for the ERP system change requests handling process

Due to complexity of the process in terms of number of participants and approval sub-processes, it seems rational to present the prototype proposal for the process as a chart and then to give detail description with stages, input and output data, actions and roles in the table form.

The process under consideration can be represented as sequence of the following core sub-processes listed in the Table 2:

Table 2 Sub-processes

Number of sub-process	Name of sub-process
01	Formation of change request
02	Approval of change request
03	Work on implementation of change
04	Business testing of change
05	Closing of change request

The chart presented below in the Figure 5 shows all these sub-processes and relevant actions step by step.

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Figure 5 Process chart

04 Business testing of change

05 Closing of change request

Testing process control

Transfer to the production

Closing of the CR

Verification of implementation

Approval of the transfer to the production

Documenting of Template structure changes

Update the Template structure in SAP SM
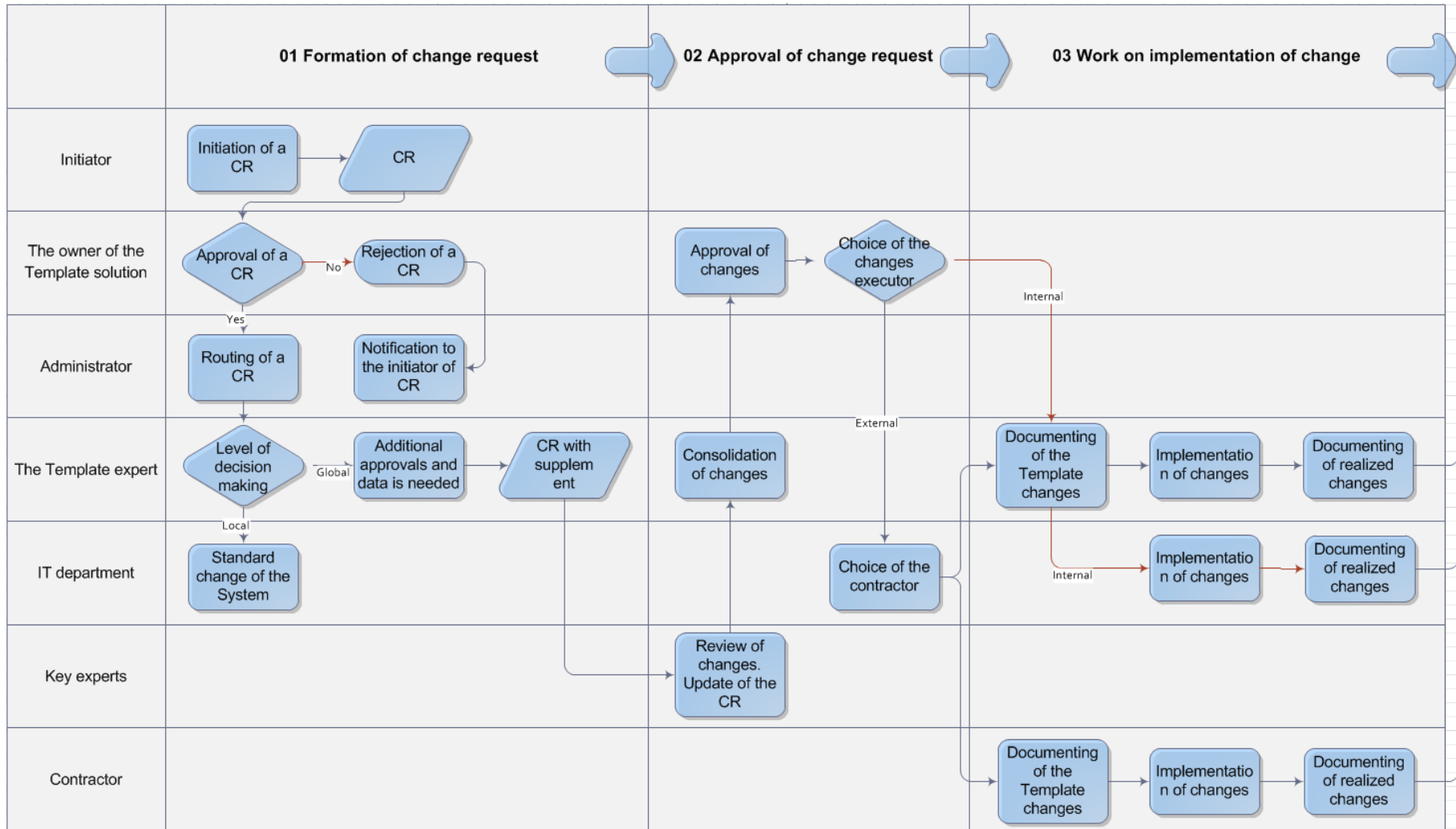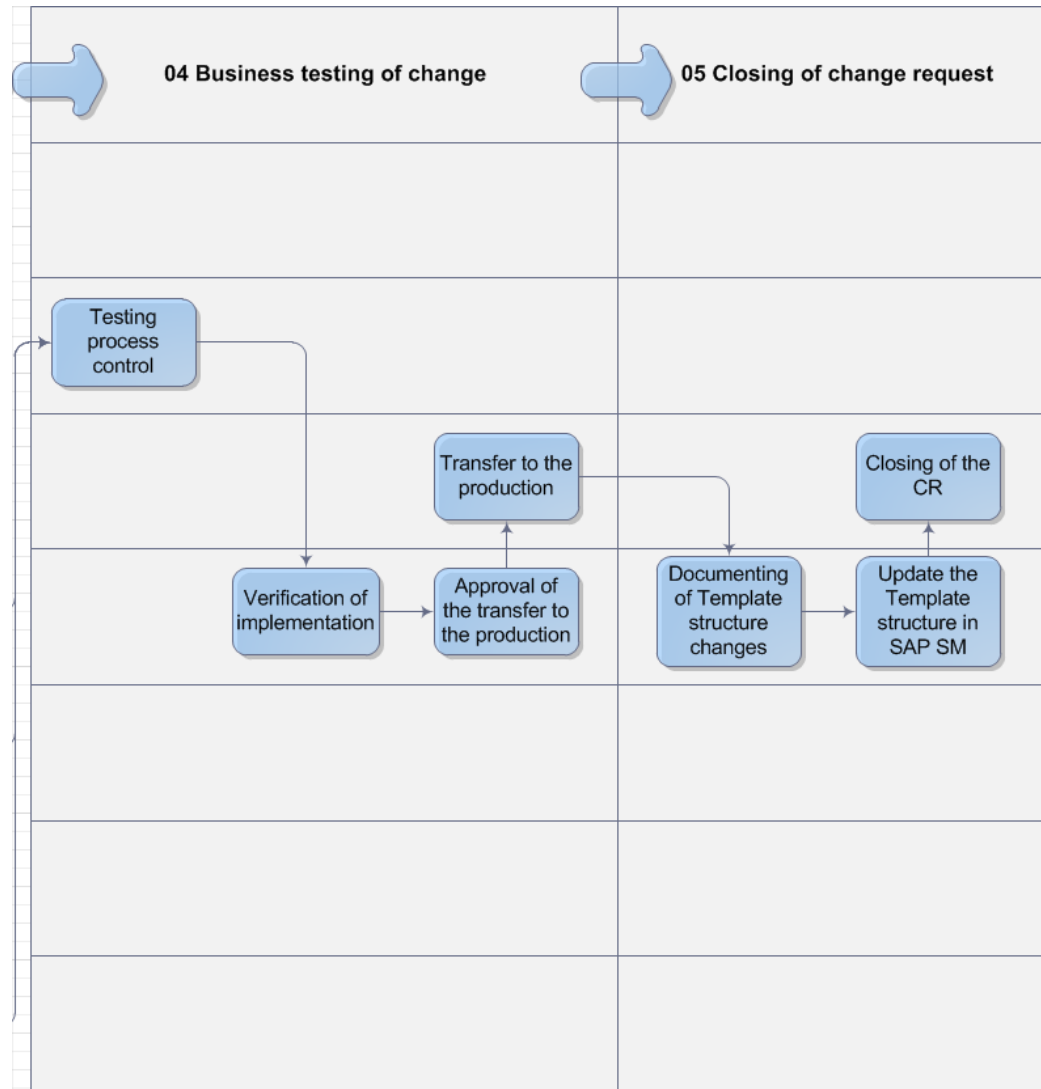
Based on sub-processes, listed in the Table 2, particular elements of the process, that include business roles, input and output data, actions and resources, can be defined and presented in the Table 3 below.

Abbreviations used in the table:
- CR: change request
- CAD: change assessing document
- the System, the Template: SAP ERP system

Table 3 Process description

Number of step	Name of step	Brief description	Input data / document	Output data / document	Business role	Period of execution	Method: manually / auto-matically
		01 Formation of change request					
01.1	Initiation of a CR	The initiating event of the process is the appearance of the need to change or add to the System. Initiator of the process analyzes the current version of the Template and defines a section of the Template he/she wants to change.	-	CR	Initiator	As needed	manually
01.2	Approval of a CR	The owner of the Template solution confirms necessity to make change in the System	CR	CR	The owner of the Template solution	3 hours	manually
01.3	Routing of a CR	After getting the approval, the administrator registers the CR and sends it to the Template expert for consideration.	CR	CR	Administra-tor	1 hour	manually
01.4	Rejection of a CR	If the owner of the Template rejected CR, the administrator sends relevant notification to the initiator of CR.	CR	e-mail	Administra-tor	1 hour	manually
01.5	Level of deci-sion making	The Template expert defines the level of decision making: is it global or local business process.	CR	CR	The Tem-plate expert	0.5 work day	manually
01.6	Standard change of the System	If it is a local business process, the decision to implement the changes taken by internal IT department, based on internal Service Level Agreement	CR	Service Level Agreement	IT depart-ment	0.5 work day	manually
01.7	Additional approvals and data is needed	If it is global business process, the CR is complemented with information on the methodological solutions and key experts of related departments.	CR	CR with sup-plement	The Tem-plate expert	0.5 work day	manually

Number of step	Name of step	Brief description	Input data / document	Output data / document	Business role	Period of execution	Method: manually / automatically
		02 Approval of change request					
02.1	Review of changes. Update of the CR	Key experts consider the CR, supplementing it with their comments on the business process. It is also determined the list of personnel involved in the testing.	CR	CR	Key experts	1 work day	manually
02.2	Consolidation of changes	The Template expert consolidates all comments from key experts, analyzes them and prepares a change assessing document (CAD).	CR	CAD	The Template expert	0.5 work day	manually
02.3	Approval of changes	The owner of the Template solution approves the decision of changes implementation.	CR, CAD	CR, CAD	The owner of the Template solution	0.5 work day	manually
02.4	Choice of the changes executor	The owner of the Template solution determines whether outsourcing is required to implement the change or not, based on the planned costs and available resources.	CAD	Decision	The owner of the Template solution	1 work day	manually
02.5	Choice of the contractor	Choice of the contractor to implement the changes.	CR, CAD	Contractor chosen	Internal IT department	1 work day	manually
		03 Work on implementation of change					
03.1	Documenting of the Template changes	Documenting the expected changes in SAP ERP solution.	CR, CAD	Specification	The Template expert, Contractor	According to the volume of work	manually
03.2	Implementation of changes	Implementation of changes in the SAP ERP system.	Specification	Volume of work	The Template expert, Contractor	According to the volume of work	manually

Number of step	Name of step	Brief description	Input data / document	Output data / document	Business role	Period of execution	Method: manually / auto-matically
03.3	Documenting of realized changes	Documenting of changes introduced.	Realized changes	Operating instruction for testing	The Template expert, Contractor	According to the volume of work	manually
		04 Business testing of change					
04.1	Testing process control	The owner of the Template solution controls the processes of testing in the SAP SM quality control and electronic confirmation system.	Test scenario	Test protocol	The owner of the Template solution	2 work days	manually
04.2	Verification of implementa-tion	The Template expert verifies the solution implemented. If the implementation does not meet the requirements, the expert sends a notification to the executor to finalize the work on implementation or rework.	Test protocol	Decision	The Template expert	2 hours	manually
04.3	Approval of the transfer to the production	Approval of the transfer to the production and operational usage.	Decision	Notification	The Template expert	2 hours	manually
04.4	Transfer to the production	Transfer to the production and operational usage.	Notification	Notification	Administrator	0.5 work day	manually
		05 Closing of change request					
05.1	Documenting of Template structure changes	Documenting of Template structure changes.	Change of the Template structure	Description of the Template struc-ture	The Template expert	2 work days	manually

Number of step	Name of step	Brief description	Input data / document	Output data / document	Business role	Period of execution	Method: manually / automatically
05.2	Update the Template structure in SAP SM	Update the Template structure in SAP SM	Description of the Template structure	Update of BPR	The Template expert	1 work days	manually
05.3	Closing of the CR	If there are no comments within the specified period, the CR is closed automatically, any further adjustments solutions are maintained under the new change request.	Notification by e-mail about closing of CR	Notification by e-mail about closing of CR	Administrator	0.5 work day	automatically

5.4   Releasing of the new process: actions and standardization

As mentioned above, the concept of continuous process improvement assumes some repetitions of PDCA cycle to achieve desired result. This section focuses on the process implementation that, primarily, related to the following stages of the PDCA cycle:

- Do – carry out the change (preferably on a small scale):
- Check the results and define, what went wrong.
- Act – adopt the change or abandon it, or run through the cycle again.

In the Table 4 these stages of PDCA are considered in the context of repetitions of the cycle during the project realization.

Table 4 PDCA cycle: project realization

Number repetition of the PDCA cycle	stage "Plan"	stage "Do"	stage "Check"	stage "Act"
1	Define the process problem, do current state analysis, Research approaches to solving the problem	preparation of the proposal for improvement	review of the proposal by participants of the process, checking for compliance with internal standards and policies	adaptation of the process: by participants
2	development of document flow and unified form of change request, choice of change request tracking system	Testing of the process flow, the document flow, terms of task execution and tracking system in the process framework	Collection of feedbacks, review the results of testing, assessment of efficiency	Process implementation: implementation of the document flow, unified forms and tracking system in use.
3	Planning of standardization: consideration of related sub process (amendments in the standard), development of SLA agreement with subcontractor.	Arrangement of discussions, preparation of the document	Review of the document, amendments	Preparation of the final document, Establishment the new separate standard on the process
4	Planning of full process automatization	To be continued…		

As it is seen from the table above, the business process improvement does not finish after the process implementation. The establishment of the new internal standard can be considered as a separate important and complicated process within the case company.

This process of standardization in the company has the following integral parts:

- Identification of the stakeholders of the process and assignment the responsible person from each group of stakeholders;
- Definition of the procedure for amending of the standard process;
- Arrangement of discussions with representatives of the stakeholders
- Preparation of the document;
- Review and amendment of the document;
- Document approval process;
- Introduction of the final standard.

However, due to the long duration of the IT support process improvement project, this paper focuses, primarily, on the first repetition of PDCA cycle.

6   Pilot testing of the proposed new process

6.1   Pilot testing overview

In order to review the feasibility of the new process, the redesigned process should be intended to be piloted on a limited scope of users and parties concerned. Due to the concept of the continuous improvement and long duration of the whole project, two stages of pilot testing can be considered within the framework of the thesis:

1. Testing or review of the proposed solution be the participants concerned (the 1st PDCA cycle) ;
2. Operational pilot testing of the improved process on small group (the 2nd PDCA cycle).

6.1.1   Review of the proposed solution

Review the proposed solution was the first step to ensure the effectiveness of the future process. Review process took place within project plan after the elaboration of the main variant of the improved process. The proposed solution was represented by the project work group. It had the following phases:

- Planning: this phase took place simultaneously with the development of the solution. The tasks of this phase included:

    - review of initial requirements for the new process, internal corporate standards (IT policies, security policies) to define criteria for acceptance the solution;
    - choice which specialists should be invited as experts;
    - arrangement a meeting for discussions and feedback session.

- Individual preparation: all invited specialists reviewed the proposed solution and noted their remarks.

- Review meeting took place at the end of July 2016. During the meeting individual remarks were discussed, defects and inaccuracies were noted and some recommendations were made. The results of the meeting were recorded in the protocol.

The proposed recommendations to the process are considered in more detail in the chapter 6.3. Fixing defects and inaccuracies found as well as providing additional clarification from project work group regarding the proposed process is scheduled for August 2016.

6.1.2   Operational pilot testing of the improved process on small group

According to the Project Plan, the pilot testing of the improved process will be conducted in the 4th quarter 2016. In this relation, this piloting phase is not carried out during the scope of the thesis.

The pilot testing of the improved process will include testing of separate elements of the process: effectiveness of interaction between related departments and SAP contractors, request tracking system, document flow, task execution terms, the process usability, IT support service efficiency and others.

For testing the focus group from the accounting department (25 employees) and IT help desk (2 employees) will be selected. The representatives of the departments involved in the process, as well as the SAP service provider will also be involved in the pilot testing. Actually, this focus group will have to demonstrate the operation of a full-fledged improved process for the further spread of this process on the whole company. The focus group will record the various aspects of work in the process and submit reports to the project management. Test results will be further analyzed in order to assess the efficiency of the process and to make the necessary adjustments. For this purpose various qualitative and quantitative indicators will be used, in particular: the average term of request processing, how many requests solved in time, how many requests solved on the helpdesk level and SAP contractor level, the average cost of ERP system improvement made by the SAP contractor, dynamics of requests.

In addition to the analysis of these indicators, feedbacks from the focus group will also be collected and analyzed to assess the degree of satisfaction with the process of ERP system users and IT support staff

These measures will allow evaluating the effectiveness of the developed process and the possibility of its implementation for the company as a whole. In addition, these indicators can be used in the SLA agreements to determine the requirements for the level of quality of IT services provided.

6.2   Feedbacks on the proposed new process

As mentioned above, the final review meeting on the proposed solution took place in the end of July 2016. Feedbacks and remarks of project experts were fixed in the protocol of the meeting.

Feedbacks from participants of the meeting recorded in the protocol can be conditionally divided into 3 groups.

The first group of feedbacks, belonging mainly to representatives of the project work group, is characterized by satisfaction with the proposed solution. At the same time, they have expressed doubts about the feasibility of the term IT support function improvement project as a whole and advocate for the revision of the project terms and budget.

The second group of opinions belongs, mainly, to representatives of "approval" functions in the process. They expressed doubts about the reality of terms of the approval provision on requests and solutions throughout the process.

Opinions about the automation of the IT support processes also differed: the first group advocates postponement of automation and offers a practicing process using paper-based forms of requests; the second group, in turn, advocates fast automation and standardization of the process.

The third group of opinions, belonging mainly to representatives of users of the ERP system, expresses its satisfaction with the improvements in the process, but at the same time it is afraid of bureaucratization of the process due to the large number of approvers in the process. They advocate for the introduction of the processing requests quality indicators.

In addition to this meeting, the author of the thesis conducted 3 interviews with actual users of the ERP system, which have a direct interest in the implementation of an improved process. Participants in the interview were the following employees:

- Head of fixed assets accounting department, Omsk branch;
- Lead payroll accountant, Omsk branch;
- Senior specialist of tax methodology department, Saint-Petersburg Head office.

The employees confirmed the relevance of the problem regarding requests handling, and expressed interest in the process improvement. However, it is also worth to note that these actual users of ERP system were not very optimistic about the process improvements. They expressed doubts about the reality of the declared terms of request processing. They also questioned the effectiveness of the new IT-support tracking system, as well as were afraid of the difficulties associated with the introduction of the new system and the appropriate training of the staff to work with it.

Notes from the interview can be found in the Appendix section.

6.3   Further propositions based on the review and feedback sessions

The analysis of the feedback received during the review meeting helped to identify areas for further improvement of the proposed process.

First of all, the project work group received the tasks to finalize the process development" on paper", which is scheduled for August 2016. In accordance with the comments received, the following tasks were set to the project work group:

- to develop paper templates of change request in regard to ERP system issues;
- to consider the possibility of simplifying the Process with regard to reducing the number of approvers without sacrificing data security and efficiency;
- to make the necessary technical adjustments;
- to prepare a final document on the Process, which will become the basis for future corporate standard for the improved process.

These tasks correspond to the objectives of the first PDCA cycle and the project plan as a whole and are the basis for the launch of the Process pilot testing and further implementation of the Process on the corporate level.

As a further development and improvement of the Process the following suggestions, made during the review meeting, were also set for consideration and introduction:

- introduction of the developed change request templates in the tracking system;
- a system to record the time working on the change request, which is spent by IT help desk as well as by SAP contractor;

- development of qualitative and quantitative indicators of IT services quality for the conclusion of SLA-agreements.

7   Conclusions

This section summarizes the research process from the initial stage of setting objective to the proposal of improved ERP system change request handling process. In addition, the research methodologies used in this research are described, followed by the final conclusions and the thesis validation.

7.1   Summary

The objective of this thesis was to improve the of ERP system support process within the case company which could help to solve the described business problem and to overcome the weaknesses of the previously existing process identified during current state analysis. Actually, the clear process for making changes to the ERP system was not used and the communication regard to this issue was broken. This, in turn, subjected to significant risks the core business of the case company as it could lead to delays in, for example, financial statement delivery, increasing in the operational costs and to other business risks. As a result, a new or improved ERP system support process was needed that could address many of these issues.

The researcher started with defining the study objective which was followed by the current state analysis of the current process. Based on the findings from the current state analysis data, researcher focused her search for best practices in literature as well as review of existing approaches to business process improvement and IT support. In literature study and review, the researcher mainly focused on continuous process improvement. As for IT support, the researcher emphasized the possibility of applying the principles of IT Services Management. The success factors of business process improvement regarding IT support were also considered.

After the review of approaches and current state analysis the improved ERP support process was presented. The proposed improved process was developed, based on the previously existing process, and was reviewed by the project experts. In addition, the interview discussions were conducted with stakeholders, which include an approver of change request solution and end users of ERP system. This process will be further developed and improved based on the feedback collected from review session. The pilot testing of the process will be conducted in the 4th quarter 2016.

Thus, the outcome of the thesis is the new improved ERP system users support process for the case company based on the previously existing process with applying of ITSM principles. And the results from the review session indicate that the majority of the process stakeholders are satisfied with the proposed options for improvements. However, the results also indicate that many process related things such as change requests templates, SLA agreements, need to be developed. Moreover, most of the steps for final implementation of the improved process, for example, pilot testing, are yet to come.

7.2 Evaluation

7.2.1 Objective vs. outcome

The objective of this thesis was to improve the ERP system users support process to avoid potential negative consequences for business within the context of the case company. The study considered different aspects and approaches business process improvement and IT support organization and, as a result, represented the new improved process, which had been developed in practice during the first stage of the appropriate project in the company.

Overall the thesis can be considered as successful based on two main decision points. Firstly, the main approaches, underlying the improved process, were considered and the work to collect feedback on the proposed process was carried out. This allowed developing the process in detail, taking into account the context of the company. Secondly, the proposed process was approved by different stakeholders during the review session as well as specific directions for the further development and implementation of the process were identified.

7.2.2 Reliability and validity

Reliability and validity are both to ensure the trustworthiness of the study. Reliability refers to how well the study can be reproduced and whether it still leads to similar results and outcome. Validity, on the other hand, is about ensuring the study actually tested what it was set out to test.

In this thesis reliability and validity were improved by gathering data on different aspects from various stand points: managers, participants of the considered process and

end-users of ERP system. This research can be considered a reliable qualitative re-search because face-to-face interviews have been conducted by the author. The inter-views were done singularly to avoid influence of different opinions between the team members.

The validity of the research concerns the interpretation of observations: whether or not

the researcher is calling what is measured by the right name. According to Silverman (2004), responses to questionnaires can be more or less valid representations of un-derlying social phenomena such as the respondents' attitudes or values.

The validity of the thesis is based on the interviews, a real project analysis and more than one year of direct observation as an employee of the case company regarding the challenges of the considered ERP system users support process.

7.3   Next steps

Even the proposed process has addressed many of the issues faced by the ERP sys-tem users, IT department and the case company as a whole, such as delays in the monthly financial closure, there are still many steps to implement and improve this Pro-cess. Next steps should be considered based on two aspects:

- The existing Project Plan on the company's IT support improvement;
- The suggestions for improving the ERP system users support process received during the feedback session.

As for the first aspect, the second cycle of PDCA should be considered. The most sig-nificant and logical stage, in this relation, is to conduct the pilot testing of the Process, which is scheduled in the 4th quarter 2016. This testing will include at least: testing of the process interactions between departments, the document flow testing, checking the observance of the task execution terms and testing of the tracking system in the pro-cess framework.

However, before the pilot testing, the planning stage should be performed properly. In particular, development of the process document flow and unified template of change request should be done as well as a change request tracking system should be cho-sen. It is significant for this stage to take into account the comments received and to

prepare a final document on the process. This document will become the basis for the pilot testing and further standardization. The focus group for pilot testing should be selected and prepared for testing.

The next step will be reviewing the results of pilot testing, assessment of efficiency according to defined indicators. It is important to organize the feedback session and get an honest, unbiased feedback on the process. It will allow the implementation of the process in full operation.

Unfortunately, due to the timing of the thesis, the mentioned above steps of implementation cannot be observed and analysed.

References

Biazzo, S. (2002), *Process mapping techniques and organization analysis: lessons from sociotechnical system theory*. Business Process Management Journal, Vol. 8 No. 1, pp. 42-52.

Bobrovskiy, S. (2007), Anatomy of IT services. PE Week, No. 24-25 (582-583), July 2007. Available from: http://www.pcweek.ru/its/article/detail.php?ID=83133 .

Business Analyst Learnings, (2013). *As-is Analysis: Why Bother?* [Online] November 2013. Available from: http://businessanalystlearnings.com/blog/2013/11/17/as-is-analysis-why-bother [Accessed: 16th November 2014].

Business Process Re-engineering Assessment Guide, United States General Accounting Office, May 1997. Available from: http://www.gao.gov/assets/80/76302.pdf

Hammer, M. and Champy, J. (1993), *Reengineering the corporation: a manifesto for business revolution*, Canadian Business Review, Vol. 20 No. 3, p. 37.

Kumar, S. and Gupta, Y.P. (1993), *Statistical process control at Motorola's Austin Assembly plant*. Interfaces, Vol. 23 No. 2, pp. 84-92.

Moen R., Norman C. (2011), *Evolution of the PDCA Cycle.* Available from: http://pkpinc.com/files/NA01MoenNormanFullpaper.pdf

Pototskiy S., Zhuravlev R. (2014), *IT services management*. Available from: http://www.interface.ru/home.asp?artId=2511

Samia, M. Siha and Germaine H. Saad (2008). *Business process improvement: empirical assessment and extensions.* Business Process Management Journal Vol. 14 No. 6, 2008, pp. 778-802.

Savory, P. and Olson, J. (2001), *Guidelines for using process mapping to aid improvement efforts*. Hospital Material Management Quarterly, Vol. 22 No. 3, pp. 10-16.

Silverman, David (2004). *Qualitative Research: Theory, Method and Practice*. Sage, London, second edition, chapter 15.

Stanciu V., Tinca A. (2013), *ERP solutions: between success and failure.* Accounting and Management Information Systems, Vol. 12 No. 4, pp. 626-649.

Tadviser (2014), *IT services: different economic models*. Tadviser portal, July 2014. Available from: http://www.tadviser.ru/index.php/Статья:ИТ-сервисы:_различные_экономические_модели

Tan, Wui-Gee, Cater-Steel A.; Toleman M. (2009), *Implementing IT Service Management: a case study focusing on critical success factors.* The Journal of Computer Information Systems; Vol. 50, No. 2;

Velocci, A. L. (2002), *Full potential of six sigma methodology*. Aviation Week & Space Technology, Vol. 157 No. 14, pp. 56-60.

Watson, G. H. (1993), *Strategic Benchmarking: How to Rate Your Company's Performance Against the World's Best*, Wiley, New York, NY.

Interview questions

1. Do you think whether we need changes in ERP system users' support process or not?

2. What are the problems associated with the current procedure of interaction between ERP system users and IT support you personally facing?

3. Have you reviewed the proposed improvements on the process?

4. Do the proposed improvements resolve the problems you mentioned?

5. What weaknesses can you highlight in the proposed process?

6. In your opinion, how these weaknesses can be eliminated?

Interview note 1

Date: August 18, 2016, 11.00 – 11.30
Participants: E. B., Senior specialist, Tax methodology department
                Daria Baleevskaia
Location: Saint-Petersburg Head office

1. Yes, at the moment the process does not work well.

2. Changes are sometimes made without approval of the methodology department. As a result, accounting is conducted contrary to the tax methodological position taken on the corporate level, violated the principles of internal control.

3. Yes. I have.

4. Yes, but if the process will be a little bit revised.

5. Declared terms of task execution, for example, term to approval methodological solutions, seem unreal due to the fact that amount of change requests regarding SAP ERP is constantly increasing.

6. It is necessary to set realistic terms and simplify the process as a whole.

Interview note 2

Date: August 25, 2016, 12.30 – 13.00
Participants: A. F., Head of department, Fixed assets accounting
               Daria Baleevskaia
Location: Omsk office

1. The process should not only be modified, but recreated, because the established process does not actually exist. There is only some kind of "tradition" of interaction with IT support.

2. Requests are processed for a long time. Accountants cannot properly keep records. We often do not know what happens with our change requests.

3. Yes, I have.

4. I hope so. At least, specific deadlines are established in the proposed process.

5. Declared terms are unreal in the company's condition. New tracking system may create new problems with staff training and be ineffective.

6. First, the process should be tried on "paper", without of automatization.

Interview note 3

Date: August 26, 2016, 10.00 – 10.30

Participants: K. B., Lead accountant, Payroll department

                Daria Baleevskaia

Location: Omsk office

1. Yes, definitely.

2. Change requests are processed for a long time. We have to provide a lot of additional information.

3. I have reviewed superficially.

4. No, it is too difficult.

5. The process is difficult to understand. There are too much approval stages and roles, more than necessary.

6. The process should be revised and simplified.