ADOPTION OF AN ERP SYSTEM

Case: Leijona Group

Lahti University of Applied Sciences
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HUUSKONEN, SUVI: Adoption of an ERP System
                          Case: Leijona Group

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ABSTRACT

This thesis describes adoption of an enterprise resource planning (ERP) system. Enterprise resource planning means managing the business processes of a company in a goal-directed way. ERP systems, which are highly integrated software, have been created to help the management of the company and to document the daily functions. Via an ERP system all the departments can update data in the same database where up-to-date information is available for everyone.

The case company is Leijona Group, which is a mid-sized company in the field of workwear. Leijona Group was established in 1954 and its headquarters is in Savonlinna. Leijona Group is a part of Fristads Kansas Group, which had 1900 employees and an annual turnover of 460 million euros in the year 2015. The adoption project at Leijona Group started in September 2014 and the new system, Microsoft Dynamics NAV, was launched in June 2015.

A project of adopting an ERP system takes at least several months or even longer than a year, depending on the size of the company and the extent of the system. The adoption process can be divided into four phases which consist of different subphases. The main phases are feasibility study, acquisition, implementation and last, use and maintenance. The ERP systems offer many advantages for a company, for example automation and standardization of data and business processes. There are also numerous challenges in implementation projects, including staying in the limits of the budget and given schedule.

There are several factors that affect the process of adopting an ERP system, for example changes regarding staff, business processes and system requirements. Low commitment level and negative attitude of the project team, management and other employees increase the possibility of failure. The final evaluation of success can only be made after the original system requirements are met and the project can be considered completed.

Key words: Enterprise Resource Planning, information system, Microsoft Dynamics NAV, system adoption

Lahden ammattikorkeakoulu

Tekstiili- ja vaatetustekniikka

HUUSKONEN, SUVI: Toiminnanohjausjärjestelmän
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TIIVISTELMÄ

Opinnäytetyö käsittelee toiminnanohjausjärjestelmän käyttöönottoa. Toiminnanohjaus (engl. Enterprise Resource Planning, ERP) tarkoittaa liiketoimintaprosessien tavoitteellista ohjaamista. Toiminnanohjaus- eli ERP-järjestelmät, jotka ovat kaikki yrityksen toiminnot käsittäviä ohjelmistoja, on luotu auttamaan yrityksen johtoa ja dokumentoimaan päivittäisiä toimintoja. Toiminnanohjausjärjestelmässä kaikki osastot voivat päivittää samaa tietokantaa, jossa ajankohtainen tieto on kaikkien saatavilla.

Opinnäytetyön toimeksiantaja on keskisuuri työvaateyritys, Leijona Group Oy, joka on perustettu vuonna 1954. Yrityksen pääkonttori sijaitsee Savonlinnassa. Leijona Group on osa Fristads Kansas Group AB:tä, jolla oli vuonna 2015 1900 työntekijää ja 460 miljoonan euron liikevaihto. Käyttöönottoprojekti alkoi syyskuussa 2014, ja uusi järjestelmä, Microsoft Dynamics NAV, käynnistettiin kesäkuussa 2015.

ERP-järjestelmän käyttöönottoprojekti kestää vähintäänkin useita kuukausia mutta voi viedä jopa yli vuoden riippuen yrityksen koosta sekä järjestelmän laajuudesta. Käyttöönottoprojekti voidaan jakaa neljään vaiheeseen, joilla kaikilla on erilaisista alavaiheita. Päävaiheet ovat esitutkimus, hankinta, käyttöönotto sekä käyttö ja ylläpito. ERP-järjestelmät suovat yritykselle monia etuja, esimerkiksi automaation ja tiedon sekä liiketoimintaprosessien standardisoinnin. Käyttöönottoprojekteissa on myös lukuisia haasteita, esimerkiksi budjetissa sekä annetussa aikataulussa pysyminen.

Useat eri tekijät vaikuttavat ERP-järjestelmän käyttöönottoprosessiin, esimerkiksi muutokset henkilökunnassa, liiketoimintaprosesseissa ja järjestelmävaatimuksissa. Projektitiimin, johdon ja muiden työntekijöiden matala sitoutumisen taso ja negatiivinen asenne kasvattavat epäonnistumisen mahdollisuutta. Onnistumisen loppuarviointi voidaan tehdä vasta, kun alkuperäiset järjestelmävaatimukset on saavutettu ja projekti voidaan näin nähdä loppuun saatetuksi.

Asiasanat: Toiminnanohjaus, ERP-järjestelmä, tietojärjestelmä, Microsoft Dynamics NAV, järjestelmän käyttöönotto

CONTENTS

LIST OF TERMS AND ABBREVIATIONS

BOM	Bill of materials
ECraft	An ERP system vendor
ERP	Enterprise resource planning
FK Group	Fristads Kansas Group
HR	Human resources
IT	Information technology
Leijona Group	The case company, a part of FK Group
MRP	Material resource planning
(Microsoft Dynamics) NAV	The ERP system that was launched at Leijona Group
MTO	Made-to-order
MTS	Made-to-stock
SCM	Supply chain management
VAS	Value added service

1 INTRODUCTION

This thesis starts with an introduction to the enterprise resource planning (ERP) and related systems as well as some terminology that needs to be understood when reading the latter parts. Second, the process of adopting an ERP system is described, distinguishing four main phases. This chapter also includes the advantages of ERP systems and the risks of adopting an ERP system.

Third part is an overall description of the process in the case company. The last chapter is the summary, which is an assessment of the project. The more detailed presentation of the project in the case company and evaluation of the project were agreed to be kept confidential so they are not part of this public version.

For the most part, the case study is based on permanent employment in the case company and participation in the project team as a key user. The theory part is founded on several electronic and literary sources. The aim of this thesis was to reflect and evaluate the project in the case company, so that the people involved can learn and develop from it. The case description may also be useful when new employees of the company are introduced to the system.

2 ENTERPRISE RESOURCE PLANNING

2.1 Business processes

A business process is a series of business functions that start from inputs, which are converted into an output. The process can consist of a number of activities and they are probably executed by different people in different departments. (Monk & Wagner 2006, 2 – 3.) Figure 1 presents a simplified order fulfillment process as an example of a business process.

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┌──────────┐   ┌──────────┐   ┌─────────────┐   ┌──────────┐   ┌──────────┐
│ Customer │ → │ Material │ → │Manufacturing│ → │ Shipping │ → │ Invoicing│
│ order    │   │ purchases│   │             │   │          │   │          │
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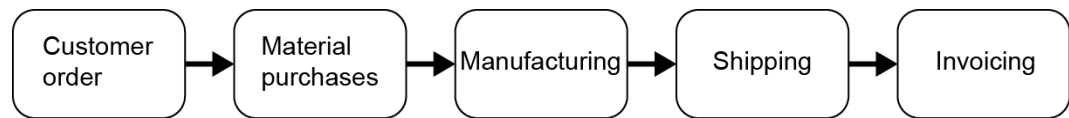
FIGURE 1. A simple order fulfillment process.

The process in Figure 1 would probably include at least three departments: sales & marketing, supply chain and finance. In this process input would be human resources, materials, as well as equipment. The output would be a made-to-order (MTO) item that is shipped to the customer.

An important point regarding the business process is that its quality is defined by the customer. In the process in Figure 1, the customer would probably be satisfied if they received both the correct item and the invoice within a reasonable time. The customer should not be in contact with the warehouse or finance personnel but the customer service person should be aware of any issues that arise in the functions of other departments in case of a customer enquiry. (Monk & Wagner 2006, 3 – 4.)

The process for a made-to-stock (MTS) item is very similar but the first step is a sales forecast instead of a customer order. The materials are purchased and the items produced to stock based on the forecasted need and existing stock level. When the customer places an order, the items can be shipped with minimum or no delay. (Monk & Wagner 2006, 7 – 9.)

2.2   Enterprise resource planning

Enterprise resource planning (ERP) means operations management. In this thesis operations management is defined according to Kettunen and Simons (2001, 41) as a goal-directed way to steer the activities of a company in different processes and at various levels.

ERP manages operations and the resources. The output must meet the requirements of the customer. The customer can be an external one or another employee of the company and the output can be for example information. Efficient use of resources is the foundation of financially profitable business. The basic resource of a company is the employee. The machines, production premises and other facilities are also considered resources. (Kettunen and Simons 2001, 41.)

2.3   ERP systems

Production management aims at such control of the production process that the manufacturing successfully achieves the desired level of quality, quantity and delivery time. Traditionally, production management has included planning of the master manufacturing schedule and efficient use of resources, controlling the stock levels and monitoring the costs. Nowadays also supply chain costs, quality control as well as both material and information logistics are considered a part of it. (E-Devel 2016.)

A material resource planning (MRP) system uses a bill of materials (BOM), i.e. a recipe, and product routing to calculate the demand of materials and capacity (E-Devel 2016). Product routing is a list of the different tasks which are needed to produce an item. The routing also includes the time required for each task. (Magal & Word 2012, 191.) An MRP system also compares material and capacity needs to reserved resources and stock levels. This results in information of how much raw materials need to be purchased or how many subassemblies have to be produced. In addition, the system defines what delivery time is possible to achieve. (E-Devel 2016.)

An enterprise resource planning system can be seen as an extended version of an MRP system with a highly integrated structure (E-Devel 2016). ERP system is a software which integrates all departments and business processes across a company onto a single computer system and database (Parthasarthy 2007, 1; Wailgum 2007a). It attempts to serve the various departments and their particular needs in a compatible way and to offer even more for the entire enterprise, for example up-to-date information about the status of a specific order (Roys & Babić 2009, 11).

2.3.1 Modules of ERP systems

Nowadays, ERP systems usually contain a number of different features, for example human resources (HR) planning, accounting as well as management of materials, inventory, production, projects and fixed assets. In large ERP systems these features are separate modules. (E-Devel 2016.) Most vendors' software is flexible and a company can buy and implement needed modules in stages (Parthasarthy 2007, 4 – 7). For example, a company can first install finance and reporting modules and later on expand the system to include production planning and inventory management. Figure 2 presents one ensemble of modules in relation with the different departments as well as customers and suppliers.
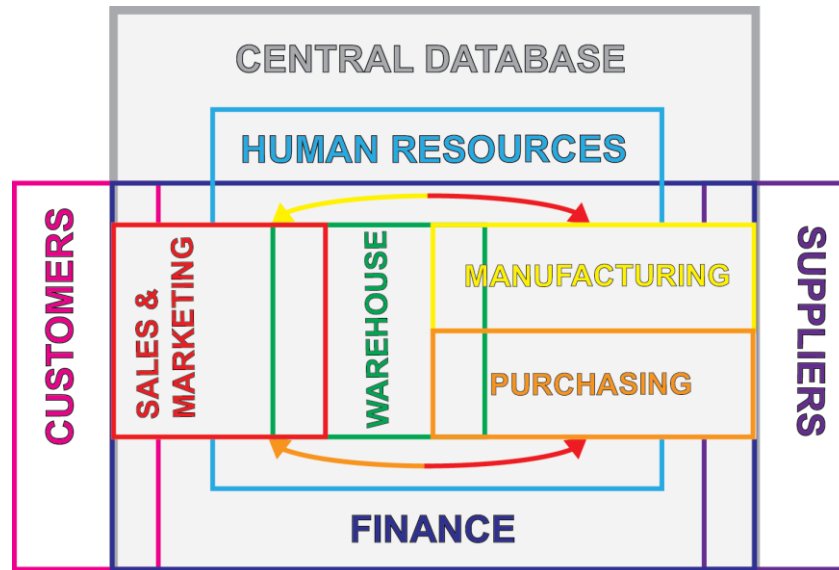
FIGURE 2. Modules of an ERP system (modified from Davenport 1998, 124).

The different modules update the information stored in the central database and in the system presented in Figure 2, the modules are also linked together and exchange information directly with each other (Kettunen & Simons 2001, 48). The functions of different departments are sometimes overlapping, for example finance needs information from all other departments and vice versa (Monk & Wagner 2006, 11). The more the modules are joined together directly the more complicated and challenging the maintenance of the system is going to be. If the modules are tightly linked, the changes made in one module might create errors in the functions of another module. (Pohjonen 2002, 32 – 33.)

2.3.2   Advantages and benefits of ERP systems

The most crucial feature and benefit of the ERP systems is the cross-functionality, which means the ability to plan, calculate and automate tasks between different functional areas. As an example of this cross-functionality is automatic costing. (E-Devel 2016.) ERP systems can handle multiple languages, currencies and locations, which increases flexibility in today's global environment (Parthasarthy 2007, 2).

Integration between different functional areas helps to standardize the business processes and data of an enterprise, so the data can be trusted and employees do not need to spend time reviewing it. If the enterprise used several different programs, ambivalent data would most likely occur. (Wailgum 2007b.)

The advantage of the shared central database is that communication between different departments gets easier and there will be less double work when everyone updates the information in the same database and can also utilize the data created by employees of other departments (Parthasarthy 2007, 1; E-Devel 2016). Simultaneously, the management of the company and planning of actions improves because there is valid real-time data of the company status available (Parthsarthy 2007, 2).

Lead-time means the time it takes to receive the ordered item after placing the order. In an ERP system it is possible to plan the purchases of numerous raw materials and components with different lead-times to enable on-time and continuous production. In addition, planning of the master production schedule and right timing of the material acquisition both lead to greater inventory control and reduced tied-up financial resources. (Parthasarthy 2007, 3.)

2.3.3   Risks and challenges in adoption of an ERP system

There are many pitfalls when implementing a new ERP system or developing an existent one. The first priority is to make sure that the developers and users communicate fluently. The software vendor must also be included in the open discussion. All parties must be committed to the project from the start so that the requirements of the users are defined correctly. (Pohjonen 2002, 45 – 50.)

Requirement definition is one of the most critical phases of the process because in this phase it is determined which are the actual needs of the users. The users have to be able to identify and to present the problems which the ERP system should solve. The developers need to explain clearly

what kind of changes are possible. The challenge lies in making an efficient compromise between different needs and hopes of various departments and users as well as resources budgeted for the system. (Pohjonen 2002, 28, 45 – 50.)

The long implementation process is also one complicating factor when adopting a new ERP system. It is typical that the implementation takes approximately a year in a small or medium sized company. During this time the expectations and requirements for the system might change. (Kettunen & Simons 2001, 49 – 50).

Another critical factor in the implementation process is the users' ability to utilize computer systems as well as the overall attitude towards them. The lack of skills to use computer systems in general makes it more difficult to clarify the needs for the ERP system, which increases the possibility of making wrong choices to begin with. System implementation might also be seen as an information technology (IT) solution only, and the development of business processes is forgotten. (Kettunen & Simons 2001, 50.) There might also be plain user resistance among employees, especially the ones who have poor IT skills and fear being downsized (Parthasarthy 2007, 5).

Limited flexibility is one of the weaknesses. ERP systems cannot keep up with continuous change, which is essential for start-ups as well as small and medium sized companies. The lack of flexibility leads to a situation where the company operations have to adapt to the logic of the system and not vice versa. This may result in giving up the optimal way of working the company had already developed (Kettunen & Simons 2001, 49 – 50).

3   ERP SYSTEM ADOPTION PROCESS

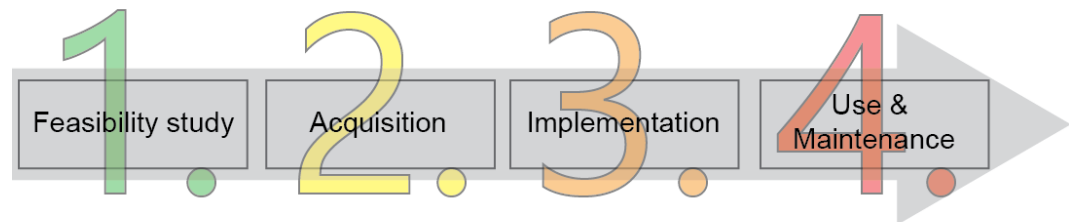Figure 3 presents the different phases of adopting an ERP system. The four phases are described in this chapter.

FIGURE 3. Main phases of the process of adopting an ERP system (modified from Kettunen & Simons 2001, 24).

3.1   Feasibility study

The first phase in the adoption process is a feasibility study. This phase is a strategical one and does not require any technical solutions. The purpose is to find out why the company would need a new ERP system, which is the suitable software and what the system would be used for. The study results help top management to decide whether or not a new ERP system should be acquired. (Pohjonen 2002, 27.)

3.2   Acquisition

The second phase is acquisition, which contains requirement specification and system analysis as well as design. Requirement specification is a collection of user requirements. There can be functional and non-functional requirements. Functional requirements are mostly tasks which different users want to carry out or document in the system, for example generating a purchase order printout. Non-functional requirements define how the system fulfills the functional requirements, so they are mostly technical features like capacity and response time. (Pohjonen 2002, 28.)

System analysis is a functional specification, which describes for example the purpose of the system, how it functions on a general level and what type of users there are (Pohjonen 2002, 31). Requirement specification and system analysis are important when deciding which vendor's ERP system will be acquired. Of course there are also other factors that affect the decision, for example estimated costs. (Parthasarthy 2007, 32.)

The actual design of the system is based on all the previous phases and sub-phases. It is divided into technical specification and architecture design. The first is a list of the needed functions and the latter defines the structure of the system, i.e. presents the different modules and the hierarchy between them. Architecture design also includes module design, which means planning of the structure of different modules and how they function. (Pohjonen 2002, 32 – 33.)

3.3   Implementation

The third phase is implementation, which is a crucial stage in the ERP adoption process. In this phase the ERP system and the business processes of the company are matched together.

3.3.1   Approaches to implementation

According to Parthasarthy (2007, 36) there are three different ways to implement an ERP system:

1.   'Big Bang' Approach
2.   Location-wise Approach
3.   Module-wise Approach

In the first one, the company implements all modules at once. The risk with this approach is high because the new system might fail. On the other hand, the company can benefit from the full integration from the start. (Parthasarthy 2007, 46.)

The location-wise approach means that the ERP system is implemented for example in one regional office at a time. The benefit is that if the implementation process fails because the system is not suitable for the company, further investments can be cancelled. Another advantage is that the duration of the implementation project is shorter for the actual users of the system, although on the corporation level it will take longer. (Parthasarthy 2007, 46.)

The last approach is called module-wised. In this one the new ERP system is implemented module by module. (Parthasarthy 2007, 46.) This is a very common way to implement a new ERP system in small and growing companies, because in the beginning there is a need for only a few modules. As the company grows, more modules can be acquired and also the costs will be split over a longer period of time. (Wailgum 2007b.)

3.3.2   Implementation process

Implementation includes various tasks, for example gap analysis, customization of the system and reengineering the business processes, creating the master data, testing and user training (Pohjonen 2002, 25; Parthasarthy 2007, 43).

Gap analysis is a method to find those company requirements that are not included in the chosen ERP system. Solutions for the gaps, i.e. missing functions, which are found can be obtained in different ways, for example by customizing the ERP system or by re-engineering the business processes of the company. Sometimes third-party products are needed to fill the gaps. (Parthasarthy 2007, 45.)

Testing is a method for discovering the errors in the system. The modules need to be tested separately but it is equally important to test the integrations between them. In principle, if tested thoroughly enough, all the errors would be found. This is never the case because such extensive testing would require too much time. (Pohjonen 2002, 35 – 36.)

Training the users is another critical factor in the implementation. The minimum requirement is that users have an adequate manual available. (Pohjonen 2002, 37.) The sooner the training is started the better. During early training it is also possible to find some gaps that were missed in the actual gap analysis, because the actual users have an insight of the business processes of the company. Well-trained key users can become experts of the system and train other users. (Roys & Babić 2009, 154 – 155.)

3.4 Use and manintenance

The last and longest phase in the adoption of an ERP system is use and maintenance. Because all the errors cannot be found during the testing of the system, it is obvious that new errors will occur and need to be fixed after the system is launched. In addition, further development has to be done so that the system keeps up with the changes in the business. (Pohjonen 2002, 36 – 37.) It might take even more than a year to be able to take full advantage of the ERP system (Parthasarthy 2007, 47).

4   CASE OVERVIEW

4.1   Leijona Group Oy

Leijona Group Oy is a Finnish based company offering workwear solutions for industrial workers, for example in the field of building and construction, mining and forestry. Leijona Group was established in 1954 in Savonlinna where the headquarters are still located. The management, warehouse and other back office activities are performed in Savonlinna. (Leijona Group Oy 2016, 3 – 5.) In year 2014, there were 57 employees in the company and the turnover was circa 15 million euros (Kauppalehti 2016).

FIGURE 4. The brands of Fristads Kansas Group (Fristads Kansas Group 2016e).

Since 1996, Leijona Group has been a part of a multinational corporation, which today is called Fristads Kansas (FK) Group (Leijona Group Oy 2016, 3). In Figure 4 is presented the brand portfolio of FK Group. These brands together can clothe employees of companies from small and local to international conglomerates in a variety of branches including cuisine,

healthcare, heavy industry as well as fire and rescue (Fristads Kansas Group 2016b – e). The headquarters of FK Group is in Borås, Sweden and there were approximately 1900 employees in 18 countries in year 2015. The annual turnover was 460 million euros in year 2015. (Fristads Kansas Group 2016a.)

The customers of Leijona Group are medium sized and large companies as well as retailers and laundries. Small companies and private consumers are usually steered to buy their workwear from the designated retailers. It is very typical to have customer specific collections and styles for big customers but there is also a Leijona catalogue assortment with collections for different uses, for example High Visibility 2.0 of which there is a catalogue illustration presented in Figure 5.

FIGURE 5. Ilustration for High Visibility 2.0 collection (Leijona Group Oy 2016, 11).

Very often, embroidery or transfer printing is added to finished garments in the outsourced printing unit, which is located in the same premises with Leijona group. For security guards, as an example, it is vital to be identificated by appearance so customer specific customization, like embroidered company name, is necessary.

It is also possible to make made-to-measure garments in the so called value added service (VAS) department, which is a small manufacturing unit. Also small customizations like shortening the trouser legs can be made there. The VAS department also makes samples for customers and as a reference to the factories where bigger quantities of garments are manufactured.

4.2   Microsoft Dynamics NAV

Microsoft Dynamics is a product family for enterprise resource planning systems and solutions. One of the solutions is Microsoft Dynamics NAV, which offers small and midsized companies a wide range of functions to support and develop their operations. (Microsoft 2016a and b) Figure 6 presents all the supply chain management (SCM) functionalities of NAV version 2016 as an example of the possibilities.
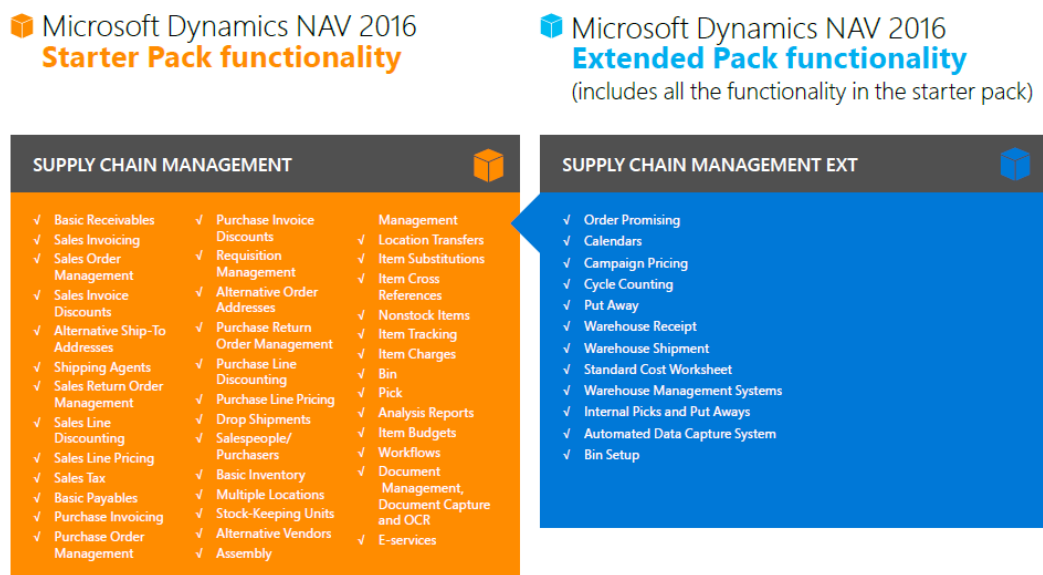

FIGURE 6. Supply chain management functionalities (Microsoft 2015, 12).

NAV consists of modules for different application areas that can be separately acquired but the modules are tightly integrated so the functions are partially overlapping (Roys & Babić 2009, 13). NAV is also integrated with Microsoft Office so it is easy to, for example, import data from NAV

directly into Microsoft Excel to analyze and to present (Roys & Babić 2009, 22).

4.3   The project of adopting NAV at Leijona Group

4.3.1   Project organisation

The project kick-off meeting was in the beginning of September in 2014. Figure 7 presents the project organisation. The steering committee and program manager were only strategically involved while the rest of the parties were responsible for the actual operations. The project team consisted of employees from different departments of Leijona Group. The members of the project team were divided into persons in charge, super users and key users which all have their own job description. (Hansen 2014, 13 – 19.)

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            ┌─────────────────────┐
            │ STEERING COMMITTEE  │
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            ┌─────────────────────┐
            │  PROGRAM MANAGER    │
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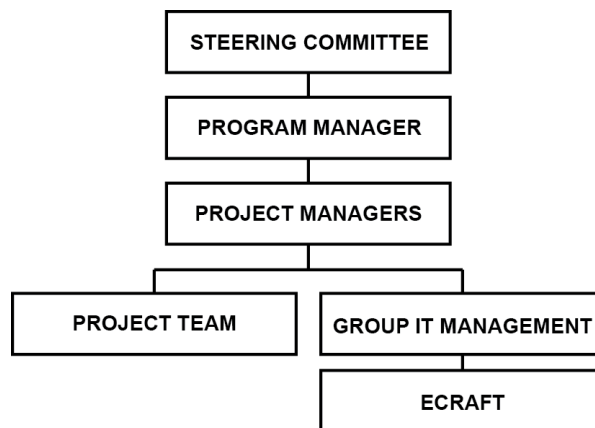
FIGURE 7. The project organisation for ERP implementation (Hansen 2014, 12).

ECraft is a Finnish company that offers various IT solutions and is a vendor of Microsoft Dynamics products (ECraft 2015). ECraft was a consultant in this project because planning, manufacturing and warehouse modules of NAV were new to the group IT management, which consisted of two persons only.

4.3.2 The implementation at Leijona Group

The first phase of the implementation was workshops for different departments where the system was introduced to the super and key users and the business processes became familiar to those members of the project who did not work at Leijona Group. The workshops were held during a two-month period and during that time most of the gaps were to be found. A major issue was that the planning, manufacturing and warehouse modules were so far from the Finnish business model of that time that the project team did not get a good idea of how the system would actually work in the future.

After the workshops, the group IT management and the external consultants from ECraft planned and built the new functions that were needed. Simultaneously the super and key users were to create test skeletons which described the different tasks which should be carried out in the test version to find errors and missing functions.

The go-live date was postponed several times for different reasons, for example because the master data would have not been ready in time. At the end of April, the so called production version of NAV, was created with valid master data. Henceforward, all the changes made in any permanent data, for example product information including BOMs, had to be updated in both the old and the new system. Only one week before the updated go-live date of the time, the launch was postponed for another three weeks until the 8th of June (Majuri 2015). This was to ensure at least some training for all the users.

Until the end of May, the old system was in full use. During the first week of June, all functions affecting stock levels were discontinued so that the book keeping and the data in the system could be aligned. This was also a good time for the users to fix errors in the master data and add information which did not exist in the old system, for example lead time and minimum order quantity.

4.4   After launching NAV

The new ERP system Microsoft Dynamics NAV 2009 R2 was finally launched at Leijona Group on the 8th of June 2015. The group IT management was working constantly to improve the system which had some errors and missing functions at that time. For example, the planning tool was not working so the need for garments, that were not stocked but ordered from the supplier after sales order, did not exist in any report but had to be calculated from quantity on inventory, sales orders and purchase orders. Naturally, working with the new system was extremely slow and the missing functionalities made it even slower. Not all employees had had sufficient training so the workload built up on a few.

At the end of March, when almost ten months from the go-live date has passed, there are still unsolved issues. For example, the forecasting and planning tool is not modified to suit the company yet so all planning has to be done in Excel.

5   SUMMARY

It is very important for a company to be able to manage their operations in a way that follows the company strategy. For the management to make the right decisions and to boost the overall operations, it is paramount to use an efficient enterprise resource planning system. ERP systems automate different tasks in and between the various departments of a company as well as offer up-to-date information of company status.

The process of adopting an ERP system includes four main phases, which are feasibility study, acquisition, implementation and use and maintenance. The last two are the most important and take the longest time. Implementation contains various subphases, for example testing of the system, training the users and re-engineering the business processes. The use and maintenance phase continues until the system reaches the end of its life cycle.

There are also many challenges in impelementing an ERP system, in terms of time, costs and other resources. The requirements of users can be unrealistic in comparison to the resources available and even with realistic needs, the result is always a compromise of many factors. The process is in any case fairly long so changes in processes and staff, among other things, introduce risks to the success of the project.

The attitude of the people involved in the project and system affects the chances of success heavily, in good and bad. If the users lack skills to use computer systems in general and their attitude towards the new system is negative, there is a high risk of failing in the launching of the system.

In the case company, the project schedule was extended several times but nevertheless the system was not fully finished at the time of launching and even ten months later some functions are missing. Hence, the project team is still working on reviewing the system and developing it further. It will definitely take time until the business processes are shaped to fit the system. The final evaluation of how well the system works can only be made after the current list of errors is cleared out.

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