Integrating IT and change management

A benefits analysis

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ABSTRACT

IT as an enabler, by obtaining benefits to an organization, was the coherent apprehension behind the purchase of the Enterprise Resource System R/3 by Ericsson in 1997. Public Networks, a 33,000 worker’s division at Ericsson, have had profitability problems during the recent years prior to the purchase. By integrating R/3 with an organizational change, the management aimed to obtain foreseen benefits, such as headcount reduction and shorter lead times.

This thesis shows in theory as in practice difficulties and obstacles in reaching and calculating benefits of IT. Through analyzing the system along with the business processes targeted by the integration project, a list of Key Performance Indicators was brought to the stakeholders of the organization. Through numerous interviews and meetings throughout the division the indicators were discussed, depicted and analyzed.

In a consensus driven organization as Public Networks, the integration project withholding the largest Enterprise Resource Planning systems had to work politically with communication to be able to gain approval for its benefits. In failing to win the process against different views and stakeholders, benefits was to be at risk and more importantly, later shown to be impossible to measure.
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1. INTRODUCTION

This thesis will follow Public Networks, a 33,000 worker’s organization at Ericsson\(^1\), and their integration of IT development and change management, integrates IT development and change management.

During the fall 1997, Ericsson made the IT-strategic decision to purchase the SAP R/3 system. This was agreed upon through all the business areas to eventually include the whole Ericsson Corporation.

SAP is a market leader in client/server enterprise application software, providing solutions for companies of all sizes and all industry sectors. SAP stands for Systems, Applications and Products in Data Processing. This is the german company that has been developing the product since it was formed in 1972. R/3 is their Enterprise Resource Planning system and it indicates that this is Release 3 of the software.\(^2\)

SAP delivers scaleable solutions that enable its customers to improve upon best business practices. SAP products are supposed to empower people to respond quickly and decisively to dynamic market conditions, helping businesses achieve and maintain a competitive advantage. (www.sap.com)

All this is supposed to happen through “a better return on information”. At SAP, they believe that to get a better return on information, you need better technology. Still, a simple purchase of SAP R/3 wasn’t believed to solve the problem at Ericsson (nor give the possibilities) since it was argued that it wouldn’t support the business (and the business wouldn’t support the technology).

Therefore R/3 is built with an integrated, modular structure, supposed to make it flexible and scaleable to the business needs. Along with the technology runs an organization which, fully integrated with all its resources from personnel to IT, will fulfill its strategies. Hence, the technology doesn’t come alone.

And therefor R/3 is sold and delivered by SAP partners, IT and management consultancy firms who have the expertise in change management and business making.

This thesis will show how Ericsson Public Network managed the project, which withholds the implementation of SAP along with organizational changes. The thesis will show where difficulties arose and why. The consequences of the difficulties will eventually be analyzed.

1.1 Background

Within Ericsson, the SAP R/3 project responsibility has been divided amongst the different business areas. Public Networks, a business unit within business area Infocom Systems, covers markets all over the world and is instituted in 110 different Ericsson companies, not including suppliers. To be able to retrieve all the benefits out of the SAP R/3 system, Public Networks has to manage change. The change and the implementation of SAP is integrated into one big project.

\(^1\) Ericsson is a world-leading supplier of telecommunication systems.

\(^2\) Many people simply uses “SAP” to refer to the R/3 system (e.g. “SAP Implementation”)

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1.2 Aim

The ambition with this work is to present the aspects of bringing an Enterprise Resource Planning system and organizational change together and draw benefits from it. Further, the features of the integrated technical solution will be looked upon as to what they contribute to the business and also enable the management of change.

Through analyzing the system along with the business processes targeted by the integration project, a list of Key Performance Indicators\(^3\) will be presented. Moreover, this thesis shows in theory as in practice difficulties and obstacles in reaching and calculating benefits of IT.

1.3 Methodology

The framework is taken from Eason (1988) and enables the thesis to show how the project manages obstacles and why they arose and what the consequences are. The framework also gives the thesis a structure.

An overall structure of the system was given by Richard Williamsson (April, 1998) while the more detailed information of the modules is a compilation between the “aim” of SAP (SAP homepage) and the view of each department head (interviews).

The business process approach in chapter 5 was chosen by this thesis to illustrate the change management part of the integration project due to its strong global approval within Public Networks. The view in chapter 5 was given by the Operations department at Public Networks (Sevenson, April 1998) along with an extensive internal manual of each process and its checkpoints. The manual has been translated and analyzed in an attempt to make the processes apprehensively depicted.

The Value Propositions in chapter 6 was suggested to this thesis by Lantz (April 1998) as overall benefits for the integration project. Some of them were excluded and some were altered, but the main structure remained. It was in the transformation into tangible benefits, the Key Performance Indicators that this work made its contribution within Public Networks corporation.

Numerous interviews and meetings in May 1998 had the purpose of gaining approval for the Key Performance Indicators contributed by this work as well as final checkpoints for the bearing of the integration project and its political process.

Ericsson’s Intranet has been the source for written material as well as SAP R/3 courses held at Ericsson.

1.4 Scope

In 1997, the final configuration of SAP R/3 was not decided upon yet. The project was still to break down their business processes to activities. After this was to be done, and agreed upon, the question of how the system should support these activities will be discussed. The actual implementation was scheduled well after this. Therefore a more general analysis of the system’s features will be conducted. A deeper task analysis will be beyond the scope of this work.

\(^3\) Key Performance Indicators became the working title of the measurable benefits of the integration project
Even though there were multiple IT development and implementation projects running at the time at Public Networks, the effects of the implementation of SAP R/3 and its characteristics as an ERP system are the only aspects analyzed and concluded upon in this thesis.

The indicators and the business benefits were all set, but a full presentation of them would contain confidential information. The details of the benefits from the project will therefore be excluded from this presentation.

The scope of the framework from Eason (1988) will be dealt with where it is presented.

1.5 Thesis outline

Chapter 1 outlines the purpose and background of this thesis. This is followed by an descriptive section of the method used in the project, as well as the scope and limitations of the thesis.

Chapter 2 describes the world and corporation of Ericsson at 1997, 110,000 employees big. Public Networks, the business unit that the thesis withholds is described.

Chapter 3 analyzes the implementation of SAP R/3, what modules it consists of and its contribution to the organization. The chapter closes with an analysis of how R/3 enables “better return on information”.

Chapter 4 consists of the theory and framework taken from Eason (1988). A benefits analysis model is depicted and structured in separate sections.

Chapter 5 withholds the business processes, as the chapter explains the aim of the change management part of the integration project.

Chapter 6 presents the results of the analysis of the integration project, the Key Performance Indicators. The second part of the project reconnects to the framework by Eason and outlines general problems with achieving these benefits.

Chapter 7 discusses the specific problems at Ericsson and where in the organizational design problems occur and arose.

Chapter 8 finally concludes the thesis.

Appendix 1 analyzes the business processes further by listing their subprocesses.
2. ERICSSON

Ericsson is a world-leading supplier of equipment for telecommunications systems and related terminals. The corporation produces advanced systems and products for wired and mobile telecommunications in both public and private networks, for delivery to customers in more than 130 countries. Ericsson had 100,774 employees at year-end 1997. (www.ericsson.se) Ericsson has operations in virtually the entire telecommunications field. The company is divided into three business areas:

- **Mobile Systems.** Cellular systems, mobile voice and data communication systems, as well as personal pager systems.

- **Infocom Systems.** Multimedia communications solutions for transmission of voice, data and images to network operators, service providers and enterprises.

- **Mobile Phones and Terminals.** Mobile telephones and terminals as well as other end-user equipment for telecommunications systems.

The business areas share a common core technology and strategy. To a great extent, they cooperate closely with one another and provide each other with products and services.

2.1 Infocom Systems

Business area Infocom Systems provides communications solutions for public network carriers, service providers, enterprises and Internet service providers. Infocom Systems addresses the area between the telecom and datacom industries and the content increasingly built on Internet or other multimedia applications. Ericsson believes that their customers are operating in competitive markets and their customers are becoming more demanding. In all of this Ericsson aims at offering a total solution and system integration knowledge to its customers.

During 1998, Infocom Systems launched a new generation of the AXE switch with an open architecture adapted to multimedia communication. AXE remained the world's most sold switching system, with 132 million lines sold or on order in 125 countries. The business area's product portfolio included all aspects necessary for open, integrated information communications solutions, from switching, transport, access and intelligent networks to computer-telephone integration (CTI) and high-speed data communications. In 1997, Infocom Systems operations accounted for sales of SEK 49.2 billion. (Public Networks Intranet, 1998)

2.2 Public Networks

Business unit Public Networks is a part of Infocom Systems and provides a wide range of solutions, products and services to operators of public telecommunications networks for provision of multi-bandwidth services over copper, fiber and radio-based networks.

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4Except Public Networks three other business units are included in Infocom; Enterprise Networks, Datacom Networks and Transport and Cable. These are however outside the scope of this thesis.
3. THE IMPLEMENTATION OF R/3

SAP R/3 is an integrated business system developed to fit all types of business, but still with the flexibility to design a unique solution for each corporation. It is designed to handle all of the business management tasks of a company. The benefits are of such type that SAP has focused on meeting the needs of mid-sized businesses up to large corporations\(^5\). A purchase of R/3 can only be done through one of SAP’s “partners”. Typical examples at the time were Ernst & Young and Andersen Consulting. The purpose of “partners” like these is to ensure the existence of skill and knowledge of business making. Since SAP’s benefits will contribute the most when organization and system are developed to fit one another. Hence, there is a need for business knowledge when offering/delivering the R/3 system. (Williamsson, April 1998)

The modules process information from all parts of the organization. Since R/3 works within one system, this information is shared between modules despite any existing organizational limitations of a company. The modules work with a common database. Hence, information that is entered into the system by one part of the organization is immediately accessible to all other parts of the organization. All application modules have a common architecture and user interface (i.e. the same “look and feel” and navigation). (SAP R/3 Overview, 1996)

The application modules at the heart of the R/3 system are grouped into three main areas: Logistics, Accounting and Human Resources. It is these modules that, with their ability to communicate and share data, enable R/3 to handle the business management tasks of an organization.

![Figure 3.A: The application modules](image)

Because of the integration between the modules, a change in one application module will result in an automatic update of the data in the others involved. So, as a user enters or updates data on-line using one module, the information is immediately accessible to all modules. For example, the accounting department can access information from the sales and purchasing departments. Similarly, accounting information is available to the production-planning department. The R/3 system works in this way since SAP designers believe that this supports the way that business organizations actually work in practice.

If an order is keyed into the system, any new information, which this order contains, is written to a database. The R/3 system recognizes that this information is required by several different modules to carry out the business process. Modules within Logistics need the information to produce goods to meet the order. Accounting modules will handle the payment for materials and the issue of invoices, and Human Resources modules need the information to provide workforce planning.

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\(^5\) SAP is currently working on products for the small business market.
The modules can then be customized to meet the specific technical requirements of a company. The idea is, as was done in Ericsson’s case, that a company may install only the modules that it needs at the moment.

### 3.1 The Logistics modules

The Logistics Modules handle business tasks that concern the whole company, i.e. order processing, material management, master production scheduling, preparing shipments and invoice verification:

![Logistics Modules Diagram](image)

#### 3.1.1 Sales and Distribution

The Sales and Distribution module handles tasks related to sales, shipping and billing. It provides sales support, such as tools for managing information on sales leads and competitor activity and the sales information system provides early warning of market trends.

When a customer places an order, the Sales and Distribution module is able to extract information from the database such as the customer’s address, sales activity and credit limit. Sales and Distribution work with modules such as Materials Management and Production Planning to check on material availability and estimate the earliest possible delivery date for the order.

Sales and Distribution provides information to employees about orders that are due for delivery. It works with Materials Management to pick the completed goods from the warehouse and supports activities related to packaging and the creation of shipping papers.

Once delivery is initiated, Sales and Distribution carries out billing automatically. This information is immediately available to the Financial Accounting and Controlling modules. (Puskaric, May 1998)
3.1.2 Materials Management

The main task of Materials Management, is to handle the flow of materials in, through and out of the company. It supports the procurement and inventory functions occurring in day-to-day business operations.

Materials Management deals with purchasing operations, warehouse management and inventory. It also features invoice verification and provides a sophisticated information system. (SAP 40 – Architecture and Integration, 1996)

3.1.3 Production Planning

The Production Planning module assists all staff from plant managers to operators to plan the production process. For example, it plans the transport and storage of raw materials, production equipment and by-products and waste.

The production operation is described in a graphical way, which shows the relationships between the stages of the process. This provides the information necessary for scheduling, control and documentation or production. Production Planning creates a production order, which summarizes costs, materials, methods, quantity and schedules. (Berglund, May 1998)

3.1.4 Plant Maintenance

Plant Maintenance handles the repair of buildings and the maintenance of equipment used in the production process. It provides information about machine usage and possible downtime. Plant Maintenance and Production Planning work closely together to ensure an efficient production process.

Plant Maintenance supports the planning, processing, and completion of plant maintenance tasks. It helps the organization to keep track of maintenance costs and resources. Plant Maintenance also provides information to facilitate decision-making about plant maintenance concerns. (Lantz, May 1998)

3.1.5 Quality Management

The Quality Management module supports all processes related to the quality assurance of the product. It provides detailed definitions of inspection schedules and manages data such as defect rates and quality related costs. When required, Quality Management will also manage quality certification. (Nordin, May 1998)

3.2 The Accounting modules

As well as preparing company accounts, the modules in the Accounting group handle the management of assets and provide reports regarding the performance of the business so that management decisions are based on objective, up to date information.

The Accounting modules provide a general ledger system, enabling balance sheets and profit and loss accounts to be continuously updated. However, they also have other functions such as the management of assets and the provision of high level reporting to assist in the general control of the organization (Bäckström, May 1998; Vestberg, May 1998; Palm, May 1998).
3.2.1 Financial Accounting

The Financial Accounting module provides the general accounting facilities such as balance sheets and profit and loss statements. These may be tailored to the needs of individual subsidiaries and are often multi-lingual. They will also comply with the regulations applying in any particular country.

In addition, Financial Accounting handles asset management, including asset history and depreciation. It will even provide simulations of the position following planned investments to assist the decision making process.

3.2.2 Controlling

Controlling is designed not only to control costs but also to control the objectives of the company. As part of this process, Controlling supplies information to assist managers in decision making and future planning.

3.2.3 Enterprise Controlling

Enterprise Controlling is an information system for company executives. It is designed to combine internal company information with data about the external markets and isolate the strategic issues, which affect marketing strategy.

3.2.4 Project System

The Project System application module supports the planning, control, and monitoring of long-term, highly complex projects with defined goals.

3.3 The Human Resources modules

The Human Resources group integrates such activities as personnel planning, recruitment, salary administration and personnel development. (Palmbrink, May 1998)
The Human Resources modules provide an integrated human resources management system, covering personnel planning and recruitment, personnel and salary administration, payroll and personnel development.

These three groups appear as menus on the main R/3 screen and it’s from these that the user selects the individual modules (SAP R/3 Overview, 1996):

![Figure 3.D: The Human Resources modules.](image)

### 3.3.1 Personnel Administration

The Personnel Administration module contains the master data area where the records of all employees are held. All Human Resources applications and many other modules in the other business groups access this data. New or updated details are, therefore available throughout the system.

Personnel Administration also provides a range of levels of time management from simple monitoring of hours worked through to automatic matching of employee hours and machine availability. Personnel Administration is also responsible for such issues as payroll and the administration of travel expenses.

### 3.3.2 Personnel Planning and Development

Personnel Planning and Development covers all aspects of human resources planning. For example, cost planning enables the effect of different payment strategies to be predicted as a basis for decision making.

Personnel Planning and Development also supports long term succession planning. For example, data on the age structure of employees’ in particular skill areas may highlight a need for the career development of existing employees or the efficient recruitment of additional resources.
3.4 The document principle

The “document principle” is one of the features of SAP R/3 that Ericsson hopes to get through the complete information technology solution. (SAP 40 – Architecture and Integration, 1996)

The concept has some simple aspects:

- Data entry is done only once when the Customer Order is created. After that it is accessible through a document database.

- Through the elimination of interfaces there will be no configuration processes needed when accessing the document.

- All application data relevant to the information are updated.

- Drill-down possibilities from concerned applications. As mentioned above, this is mainly done through the elimination of interfaces, but would not have been the case without the shared document database.

- Traceability between activities.

![Diagram of the document principle](image)

Figure 3.E: The document principle.

The idea is that SAP R/3 will contribute with its integrated feature all over the corporation. That cannot be done without common processes. Once those are established, R/3 can be configured to fit the processes and the underlying activities. Well after that it will be time for the implementation.
4. INFORMATION TECHNOLOGY BENEFITS

A structural framework will be given to this chapter by Eason (1988), who proclaims that “each application will be undertaken in order to achieve specific benefits”. Eason also argues that not only does technical innovation represents a risk, and a common result of an implementation of the information technology systems is complete failure of achieving the benefits. Furthermore, impacts of unwanted and even negative consequences were to be found in several post-implementation surveys.

In order to depict the obstacles that are to be encountered one need to specify the different benefits one might hope to achieve. Eason (1988) structures different information technology benefits as follows:

<table>
<thead>
<tr>
<th>Resource Deployment</th>
<th>Tangible Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. Cost Reduction</td>
</tr>
<tr>
<td></td>
<td>2. Improved Productivity</td>
</tr>
<tr>
<td></td>
<td>3. Improved Support</td>
</tr>
<tr>
<td>Work Enhancing</td>
<td>4. Organizational Enhancement</td>
</tr>
<tr>
<td></td>
<td>Intangible Benefits</td>
</tr>
</tbody>
</table>

Figure 4.A: Information technology benefits (Eason, 1998, p.13)

Figure 4.A shows a classification of information technology benefits based upon a continuum from resource reduction to work enhancement, where the first group (1) withholds the most tangible benefits to obtain, while the last (4) are the least tangible benefits.

The left arrow indicates the nature of the different groups of benefits, stretching from resource deployment (e.g. headcount) which would present prominent Cost Reductions, to work enhancing (e.g new business areas) which is a part of organizational enhancement.

4.1 Cost reduction

The first group is cost savings. An example - and often the major target - is staff savings through employment reduction. This is due to their tangibility and can easily be set against the direct costs of development and implementation of the system.

According to Eason (1988), there is however a remarkable difference between predictions of staff savings and the actual change in job numbers due to:

- *The overestimation of routine*. Even though IT enables direct replacement of routine work, surveys show that average clerical staff tends to spend only a part of their work with routine work.
- **Organizational change.** If IT is implemented in order to reduce job numbers some degree of organizational change will be involved. As shown at Public Networks, attempts to introduce such changes may be objected by powerful people (stakeholders), who lack the will and the intent to push through the changes necessary.

- **Job reductions as a convenient fiction.** Staff savings has become an argument for getting the implementation approved within the organization, sometimes even without the intent of a follow-up.

- **Resource reductions are job losses.** Staff savings are equal to job losses and are likely to be fiercely resisted by the individuals in the staff and their representatives, with long time negotiations as a result.

- **The impact of enhancement objectives.** When facing the beginning indicators and/or final non-satisfying result of a failure in cost reduction, organizations tend to escape the facts in this group of benefits to other more non-tangible benefits i.e enhancement objectives. Arguments such as, “we still have other enhancing benefits, sprung from resource allocation (e.g. time saving)” does not make the difficulties of achieving cost reductions such as staff savings disappear. Also, enhancement benefits tend to be incompatible with cost reduction.

As will be shown later in this thesis, the implementation project at Public Networks will face the organizational change as the key obstacle in obtaining the predicted cost reduction.

### 4.2 Improved productivity

It is from the existing resources an organization might find higher productivity, which is the second group in the classification. As in the case of the Supply process at Public Networks where the goal is to process more products/services (or the same amount at a shorter time).

Eason (1988) argues that it is often easier to obtain improved productivity than cost reduction, but there are however some pitfalls:

- **Is greater productivity beneficial?** Information technology “benefits” greater volumes and widely distribution of information, but is such a productivity gain beneficial? It is necessary to trace impacts from extra productivity on the effectiveness of organizational goal achievement.

- **Productivity may mean greater control.** Information technology can manage control continuously, restrictingly and supervisingly. Using control by IT can (however impersonal) provoke negative responses from employees. A better way of gaining productivity is to let the employees monitor themselves in obtaining overall goals.

- **Organisational change and human learning.** Introducing information technology systems to organizational units normally involves organizational changes in e.g. reporting structures. Hence, this will involve educational issues with the employees engaging in their new set of tasks.

An important point that Eason (1988) makes of this group of benefits is that information technology is not to be looked upon as at simple purchase, as much as it is a possibility to be
used to shape the way of working to achieve the benefits of the implementation. At Public Networks the enhanced productivity was a major selling argument for the implementation advocates. Even though the implementation project did not have any major problems with the specific pitfalls mentioned in this section (improved productivity), it was merely a question of who was to be the owner of each productivity benefit. The stakeholders in the organization all agreed that improved productivity was to be gained, but they all disagreed of the source of the improvement.

4.3 Improved support

The third group arises as a result of an expansion of the quantity or the quality of the work done directly in pursuit of the organization’s objectives. An example would be better decision-making through better information support for managers (an expansion of quantity) or a higher information accuracy in reports (expansion of quality). An example of the expansion of quality in the implementation project at Public Networks would be the documentation principle which is an embedded feature in SAP R/3, described in section 3.5. Through limited input sessions of an order, the sources of errors are reduced and hence the information in the system, supporting the order and supply processes, will have better accuracy.

There are, as with the other groups of benefits, issues to address to obtain improved support:

- **Ensuring improved support to be beneficial.** It is hard to immediately determine a value of for example reports free from errors. Also, it is rarely determined whether the operating staff (e.g. managers, sales personnel or suppliers) will find the information system implemented beneficial. An implementation project has usually a harder task at hand addressing improved support benefits compared to achieving benefits regarding optimized resources.

- **Developing and implementing easy-to-use-systems.** User friendliness (easy to use as well as easy to learn) is a must when it comes to obtaining improved support. Problems are likely to occur when “busy” professional people are assumed to immediately use systems and learn skills they are likely to use most occasionally. A failure when it comes to addressing this issue, will most likely result in staff not using the system. These users, which merely or completely choose to not use the information system are called “discretionary users”.

- **Functionality, usability and acceptability.** By somewhat depicting “user friendliness”, three system characteristic aspects occur. Discretionary users (mentioned above) turn to basic cost-benefit thinking in evaluation whether to use or not use the system. If benefits (functionality) do not exceed the costs (usability and acceptability), system use will not be maintained in the long run. Most commonly the costs are obvious to the users, while the benefits of functionality are harder for the user to assess. It is important that probable “discretionary users” are given the opportunity to discover benefits by themselves. This makes the introduction of the system critical, making it merely a modest one, addressing the curiosity of the user, instead of a high-profile introduction, addressing large user expectation.

- **The assumption that information technology leads to organizational change.** In doing so, one neglects the fact that even though staff will find the system beneficial
regarding improved support, different people will react and behave in different ways. Benefits from the implementation for some groups might be found threatening by others, and therefore blocked. Eason sees the organization as a collection of interrelated work roles and a change in one will affect others.

Acceptability is an interesting system characteristic aspect at Public Network. Eason (1988) means that acceptability addresses the users “will” of using the system and the organizational context of use. Costs of acceptability would therefore include fear of failure, fear of loss in status, power of influence etc. These costs are more related to the culture of the organization than the information system itself.

4.4 Organizational enhancement

The last group concerns achievement of important organizational objectives. This may involve internal objectives such as new forms of integration (Public Network’s integrated supply process) and communication or it may involve external objectives in new areas of business. These objectives are necessary if information technology is to have a major impact on the actual organization, as debated later. Many implementation leads to failure of these objectives due to:

- **The organizational need was not addressed from the start.** If a information system development and/or implementation starts with addressing the technical opportunities the system is unlikely to solve fundamental problems and/or opportunities within the organization. At Public Networks, the technical opportunities of SAP R/3 were the underlying reason behind the purchase. The pitfalls of this approach were somewhat solved during the implementation as described in section 5.

- **The development of specialist systems.** Often the system is developed and implemented by system specialists and the output becomes a product for system specialists. In achieving organizational enhancement, “specialists” must offer, apart from technical knowledge, insight in business requirements and inside knowledge of the organization. At Public Networks external consultants were working side-by-side with managers during the tendering part of the implementation project. They were focused on bridging the gap between the system specialists and the business/organization specialists. The result solved the problem with “specialist systems”, however costly.

- **Lack of organizational change.** A new technical system implemented in an old form of social system is incompatible with achieving organizational enhancement. “Above all other considerations, the pursuit of organizational enhancement using information technology demands organizational change.” (Eason 1988) At Public Networks the “old social system” was to be the key obstacle in the SAP R/3 implementation project. This is discussed in section 5.
5. CHANGE MANAGEMENT

“Change is all about people.” (Richard Williamsson, May 1998)

This project has two dimensions. The first regards all the administrative functions at Public Networks who faces cuts in headcounts. This is due to the increased availability of information that is to come with the new systems. It is done through a mix of in-house analysis and external knowledge. As mentioned in the Introduction change management skill is delivered through bigger consultancy firms. But, to enable an efficient solution in this matter in-house analysis is done along with managers/management at Public Networks. The main goal is a major reduction in headcounts. In chapter 6 it will be shown that Public Networks hopes for the main cost savings in this area.

The second dimension is the political process. The change process also includes some alterations in the structure and in the way of working at Public Networks. More details are presented in section 5.2. As quoted above Richard Williamson means that change management is all about people. No person will fully agree on a change if he/she cannot see either the benefit for him/herself or the better good. Hence, this message has to be communicated throughout the organization.

5.1 The business process view

The organizational change analysis is presented in a process view, since the contribution of the different IT-solution (and of course the integrated IT-solution) is easily linked and apprehended through process thinking.⁶

“For Ericsson to remain a leading international supplier of telecommunications networks requires continuous development of products and services. Equally important is the way they manage their business operations. These must be process-oriented and cross-functional to optimize efficiency, quality and customer satisfaction.” (Rolf Strandlund, Internal Information, Ericsson)

⁶ A process can be defined as a series of actions, which are carried out in order to achieve a particular result.
Ericsson business operations depend on co-operation and compatibility between many companies and products. For this reason a common approach is required where all business processes are clearly defined. The purpose of the business processes is to ensure:

- Efficient and secure end-to-end fulfillment of their customer commitment (customer satisfaction).
- Improvement of their operations (profitability). Cross-functional operation and competence development (leadership and employee empowerment).

The SAP R/3 system is intended to have major contributions in Management, Support, Sales and Supply. Their connection to the Time To Costumer (TTC) flow will be clarified in this section. Although the areas of Market/Customer needs, Customer satisfaction, Management and Support are not in themselves processes, they are nevertheless vital components in Public Network’s overall process strategy. (Göransson, May 1998; Mikael Nilsson, May 1998) All the components, flows and processes are presented below.

5.1.1 Management

Management ill ensure short as well as long-term profitability. This is achieved by making decisions and controlling processes that result in the supply of products and services to satisfied customers.

5.1.2 Support

Support provides Management and Business processes with necessary information regarding
performance, results and resources. In addition, to uphold a business-oriented conduct, they are focused on profitability and customer satisfaction.

The support is a typical aim for the first dimension - cost saving through reduction of headcounts in administrative functions - of the change management part of the project.

5.1.3 Time To Market Flow (TTM)

The Product Management and Product Provisioning processes together provide a product and service development flow called the Time-To-Market (TTM) flow. It begins with an idea or a requirement for a product or service, typically by Product management. Products are defined and industrialized\(^7\) in the TTM flow, also standard configuration products, which are a key factor to short lead-times, are defined within the TTM flow.

5.1.4 Time To Customer Flow (TTC)

The Sales process and the Supply & Implementation process together provide a product and service supply flow called the Time To Customer (TTC) flow. It begins when the customer requests an offer from Ericsson for the provisioning of a solution. If the offer results in a contract, an order and product specification is prepared (output of Sales process). Then the Supply & Implementation process commences where the solution is sourced, made and implemented. The flow does not end until the customer has accepted the solution and payment has been made.

5.1.5 Customer Satisfaction

A customer’s view of network operation:

"The network is at the heart of our business. To deliver world-class performance to our customers (end-users), means that we must have world-class network systems, equipment and support from our suppliers”.

The fundamental task of Ericsson is to produce products that meet user needs - with the ultimate assurance that products also satisfy user expectations. Customer satisfaction has to be measured. A feeling is simply not good enough. Measurement helps Ericsson to set the correct goals and to enhance their processes in a competitive way. Customer satisfaction can only be measured subjectively. Internally, Ericsson carries out some objective measurements that, if the result is good, contribute to customer satisfaction. Examples are:

- Complete expected functionality.
- Complete delivery on time.

According to Ericsson’s quality policy, they should strive to exceed customer expectations. To be able to do this, they must of course know what the customer’s expectations are. Correct measurement of these is the only way they can validate their goals for performance, quality and time.

\(^7\) Industrialized means that the products meet handling and supply requirements of the Time To Customer flow.
5.1.6 Market Needs

Need is a lack of something, a condition requiring provision. It is a state that should be able to define with a reasonable degree of precision. Expectation is an anticipation of the future state of things, particularly of benefits to be derived from satisfying a need. It is still highly subjective and difficult to define since it can change.

Given a need, the related expectation always has two components, the manner in which the need is met and the anticipated benefits to be derived.

Ericsson’s interpretation of customer needs and expectations is the specification. It contains both what they should supply (the product) and how it should be supplied (the process).

Below follows brief explanations of the business processes and its purposes (Johansson, May 1998; Sevenson, May 1998; Vestberg, May 1998). The subprocesses of each process below can be found in Appendix 1.

5.1.7 The business processes

Marketing
All activities generating inquiries from customers are part of the Marketing process. Purpose is to establish market relations, ensuring that the market recognizes Ericsson’s products, services and ability as a business partner.

Understanding current and future customer needs and provide total solutions that enhance the customer’s competitiveness.

Proactively supporting Ericsson’s customers in defining existing and future needs, developing solutions that ensure the customers’ competitiveness.

Output: Request for proposal

Sales
All activities concerning the specification of what is to be supplied and in which way, are part of the Sales process.

Receiving orders based on proposed solutions that satisfy customer needs and expectations as well as Ericsson’s business objectives.

Output: Order and product specification.

Supply & Implementation
All activities necessary for fulfilling the contract with the customer are part of the Supply & Implementation process.

Fulfilling all requirements in the contract to the customer’s satisfaction.

Output: Products ready for acceptance.

Product Management
All activities leading to the definition of a product catalogue are
part of the Product Management process.

Assessing product goals, strategies and plans, and manage the decision process regarding changes in the product catalogue. In addition, provide product information to other processes.

Output: Ericsson Product catalogue.

Product Provisioning

All activities leading to the development and documentation of manageable and deliverable products are part of the Provisioning process.

Providing and maintain new and enhanced products that increase the competitiveness of Ericsson’s customers in accordance with the product business plan. In addition, manage network systems characteristics and architecture.

Output: Certified products including services for general use on all markets.

Customer Services

All activities supporting the customer’s operation/use of telecommunications are part of the Customer Services process.

To be able to offer operators a full range of services to improve their overall business efficiency, and to contribute to additional product sales.

Output: Performed services accepted by the customer

5.2 The Corporate Time To Customer Process (TTC)

The TTC project is now running on a corporate level where the main goal is to agree upon one common TTC process for all the business areas within the Ericsson Corporation. To do this the TTC project group has to manage change.

Ericsson has a corporate culture where consensus is a significant way of dealing with decision-making. This project deals a lot with the way to work and the way to structure the organization and the effects reach out to many co-workers who have worked for Ericsson doing the things they do for a long time. With this consensus-driven corporate culture, the stakeholders take the role of the specialists. Hence, one big obstacle to quick decisions (or to a unison decision whatsoever) is the many specialists way of looking at the environment.

Ericsson Infocom Systems (where Public Networks is included, see chapter 2) has not been very profitable, opposite to e.g. business area Mobile Systems. They are also small (in head-counts) compared to Mobile Systems. Therefore the latter is more powerful compared to Infocom Systems. Since Mobile Systems is currently doing very well they have no rush in implementing R/3 or in agreeing upon a common TTC-flow. Other smaller business areas within these two major ones are in a real hurry to get things done since their overall survival might be threatened if they don’t perform well in a near future. (Lantz, June 1998)
The Infocom Systems people are convinced that the SAP Implementation project and the TTC project have to be linked together to create the value for the business as intended. A proof of this is the development towards outsourcing the Public Networks part of SAP Implementation project to the TTC team. Hence, the Infocom Systems (and especially Public Networks) people proclaim the need for an integration between the two projects as well as for the importance of speed. The Mobile Systems people, who still are interested in the TTC project and have decided to purchase R/3 along with the rest of the Ericsson Corporation, have an attitude that hampers a rapid development or even stops it.

6. THE BENEFITS OF SAP R/3 AT PUBLIC NETWORKS

The SAP R/3 implementation project and the organizational changes will together contribute with business benefits. Figure 4.A shows us four different groups where group 1 hosted the most tangible benefits, while group 4 included the most intangible ones.

At Public Networks the benefits are structured in different Value Propositions (Lantz, April 1998). Each Value Proposition is presented in figure 6.B along with an indication of what benefit group they belong to according to Eason (1988):

<table>
<thead>
<tr>
<th>Value Propositions</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Implementing Global Supply Chain</td>
<td>Cost Reduction Organizational Enhancement</td>
</tr>
<tr>
<td>2. Utilizing order accuracy and completeness</td>
<td>Improved Support Organizational Enhancement</td>
</tr>
<tr>
<td>3. Quoting accurate delivery times, delivering on time</td>
<td>Improved Productivity Improved Support Organizational Enhancement</td>
</tr>
<tr>
<td>4. Initiating an integrated supply program</td>
<td>Improved Support</td>
</tr>
<tr>
<td>5. Forecasting customer demand</td>
<td>Improved Support</td>
</tr>
<tr>
<td>6. Improving business decision making through information</td>
<td>Improved Support</td>
</tr>
<tr>
<td>7. Improving cash management</td>
<td>Improved Support</td>
</tr>
<tr>
<td>8. Pricing orders accurately</td>
<td>Improved Support</td>
</tr>
<tr>
<td>9. Creating a knowledge base for sales</td>
<td>Improved Support</td>
</tr>
</tbody>
</table>

Figure 6.A: The Value Propositions.

As can be seen in figure 6.A the Value Propositions have a tendency for the groups nearer Work Enhancing according to the left column. This has consequences for the evaluation of the progress of the project, since this means that the benefits are relatively intangible, according to the right scale in figure 6.B. Hence, it is important to look at the Value Propositions as a whole. If the indicators give positive signs as a whole the project is very likely to progress.

6.1 The key performance indicators.

The implementation project is facing resistance in the Public Networks area and among the members of the organization, and a major task for the design team is to communicate the importance and necessity for a big integrated project. Hence, the proposed evaluation for an
The Value Propositions has to be measured by some indicators, since Public Networks will not know whether the project has created benefits for the business or not. The Key Performance Indicators have the purpose of showing how the project succeeds. The indicators have been divided under the Value Propositions, as follows:

<table>
<thead>
<tr>
<th>Value Propositions</th>
<th>KPIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Implementing Global Supply Chain</td>
<td>Headcount</td>
</tr>
<tr>
<td>2. Utilizing market sales tools for order accuracy and completeness</td>
<td>Order lead-time</td>
</tr>
<tr>
<td>3. Quoting accurate delivery times, delivering on time</td>
<td>Penalty expenses</td>
</tr>
<tr>
<td></td>
<td>Order delivery precision</td>
</tr>
<tr>
<td></td>
<td>Customer Satisfaction</td>
</tr>
<tr>
<td>4. Initiating an integrated supply program</td>
<td>Inventory Turnover at Operations</td>
</tr>
<tr>
<td>5. Forecasting customer demand</td>
<td>Forecast Accuracy</td>
</tr>
<tr>
<td></td>
<td>Unabsorbed burden</td>
</tr>
<tr>
<td>6. Improving business decision making through information</td>
<td>Headcount Resource &amp; Development Department</td>
</tr>
<tr>
<td>7. Improving cash management</td>
<td>Outstanding Debtor Days</td>
</tr>
<tr>
<td>8. Pricing orders accurately</td>
<td>Unadjusted margin</td>
</tr>
<tr>
<td>9. Creating a knowledge base for sales</td>
<td>Net Sales</td>
</tr>
</tbody>
</table>

No Value Proposition will alone give the benefit measured by the indicator. Hence, the indicators have to be looked upon as a whole. If all the indicators show a progress then it is a fact that the project proceeds and creates benefits. But if one of the indicators is showing bad results, the more than one Value Proposition is not coming through.

6.2 General problems with achieving benefits

Having presented tangible benefits (i.e. key performance indicators) to be achieved at Public Networks after the implementation project, this section will discuss the some general problems achieving them. According to Eason (1988) the different groups of benefits (sections 4.1–4.4) each present problems while “over-selling” the impact of an information system. The question then remains; will success automatically be gained? The list of benefits from Public Networks will produce problems due to:

- **Intangible benefits.** Should the full potential of the information systems supposed to be implemented and valued, time and resources will be needed to focus on the methods of valuating the benefits. Sheer intangibility is and will always be an obstacle for selling, implementing and evaluation information technology. The least tangible benefits (e.g.…) are perfect examples of efforts made to give intangible benefits easy measured indicators. Net sales are for examples very easily measured, but the question remains, how much of an future shift in net sales are driven from any of the aspects of the implementation and/or organizational change made at Public Networks? Different stakeholders will most likely contribute with different answers.
- **Problems identifying worthwhile benefits.** Whatever the business requirements and therefore objectives for an implementation of information technology in any given organization the list of pursuable benefits can be extensive. Choosing what benefits to pursue also includes choosing in what way the information technology (and organizational change in Public Network’s case) is supposed to aim these business requirements. At Public Network, greater understanding, reduced resistance and better evaluation might have been achieved through a greater discretion of value propositions and key performance indicators. The extensive number of benefits proclaimed by the project was a high-profile, easy to question way to sell the implementation internally.

- **Human learning.** All benefits, except cost reduction, will only arrive through the process of human learning. No organization will improve productivity, improve support or enhance the organization until the staff master the technology. This implies that all benefits are likely to take time to achieve. At Public Networks, no key performance indicator are developed without a long-lasting consideration. How the organization succeeded to measure the benefits over time remains unanswered in this thesis due to reorganizations at Ericsson.

- **Losses to others.** In the case of staff reduction (section 4.1) it becomes evident that benefits for some, might imply losses for others. This argument also applies in section 4.3 (The assumption that information technology leads to organizational change). During the work of this thesis no clear example of such benefit was found (even the staff found work in other parts of Ericsson) and it became obvious that different stakeholders fought for different benefits.

- **Conflicts between different types of benefits.** Eason means that although a system might enhance work and therefore open up the possibility of cost reduction, it is assumable that e.g. staff reduction will make remaining staff overloaded with tasks from the leaving work force and therefore conflict with the work enhancement. No conflict between benefits was found within the scope of this thesis, however conflicts were found between stakeholders regarding what benefits derived from where and implied to what. At Public Networks, stakeholders for the TTC-Biz project proclaimed that their benefits (reduced order lead-time) would have an impact at head-count, while stakeholders for the implementation project thought that staff reduction was a benefit derived from the system and that reduced order lead-time was a secondary effect of the implementation.

- **Secondary effects.** An organization cannot simply implement information technology to obtain certain benefits and in that context isolate the effects on the organization to the benefits declared. At Public Networks secondary effects include costly political processes, a reduced focus on the market and their clients since this project is very focused on internal processes and shifting costs to other business areas.

Eason summarizes, “Whilst not denying the importance of technical issues, the analysis […] suggests that in choosing and developing a system, there is a major role for the users which has more to do with knowing their information requirements, establishing the purposes for which information technology could be used and working out how to handle the human and organizational issues associated with the change.” (Eason 1988).
The organizational issues at Public Networks were to become the key obstacle for the project. This is analyzed in the next section.

7. ORGANISATIONAL DESIGN

Ericsson has a corporate culture which gives a political process like the organizational design an environment of consensus-making. Ericsson is consensus-driven down to the last co-worker. Hence, the design team and the Public Networks management clearance is not enough to make the departments going.

The currently most important factor for the project is the communicative relationship between Product Management, Marketing & Sales and Operations. These three parties have different reasons to benefit from the project. Marketing & Sales will get the right information on what to sell and what price etc. Product Management will regain the control of the products themselves and the profitability. Finally Operations will get the right information from Marketing & Sales and therefore be able to shorten their lead-times. The relationship between the three parties has for a long time lacked one critical factor; trust.

![Figure 7:A: Trust between Product Management, Market & Sales and Operations.](image)

The structuring of the design team does not enable the envisioning part of the organizational design to be spread out in the organization. This has consequences when the job design is to be done. The job design follows the process design which is nearly set, as in figure 5.A. The job design is a more detailed description of how things are to be done. As Public Networks comes closer to detailed descriptions in their way to a common organizational design the design team meets resistance in the different departments.
The figure is supposed to be applicable whatever the scale of the organizational unit under consideration. Eason (1988) means that it is important to define the organizational unit undergoing the analysis in the job design. This feature of the model is especially interesting in Public Networks’ case. In the interviews with Michael Furey (May 1998), Christer Johansson (May 1998), Nils Nilsson (May 1998) Tomas Pleiborn (June 1998) and especially John Sevenson (May 1998) it becomes clear not only how important it is to make sure that the organizational units are defined but also how Public Networks have failed regarding this necessity.

In the interview session with Sevenson it became clear after a thorough discussion that the people at Operations thought that the implementation of R/3 was a project separated from the TTC project. Once the opposite fact was clarified to him it struck him as odd how a global corporate project as TTC where all Ericsson companies and supply processes were involved could be a project aligned to the Public Networks R/3 implementation. He and his staff have a global organizational focus and have problems focusing on Public Networks business.

If the project have had better resources in terms of design team, maybe the vision of Public Networks business, goals etc could have been captured in a more thorough way within Operations. Instead the project meets resistance in the Operations organization which has devastating political effects on the progress of the project.

Hence, when it comes to job design and evaluation criteria, Operations for example, will focus on the directives from the Global TTC project.

“Different ‘stakeholders’ may place different priorities on the criteria and most job design
specialists now adopt participatory approach in which the relevant work-force play a full part in selecting an option which meets their requirements.” (Eason, 1988, p. 114)

The Technical System Criteria box in figure 7.B regards the primarily variable setting in the modules of the SAP R/3 system initially purchased from SAP and their partners. These activities are about to start but the variable setting process will await the job design before starting. Since the job design is facing obstacles of political nature there is a risk that the variables will be set before the job design is fully agreed upon and Public Networks might find themselves with a system supporting activities incoherent with their real nature. Hopefully the technique is as flexible as SAP states it to be, and the settings can be altered posterior to the implementation of SAP R/3.

Even though Public Networks has not really reached the box Organizational Consequences it is possible to have a look at how the failures in structuring of the design team and in defining organizational unit has critical effects on the project’s progress and contribution to the overall business of Public Networks.

Public Networks is in term of progress currently finding itself in the Option Selection box in figure 7.B. As discussed earlier the political nature of this process makes the project tough to manage and to reach the objectives set for the project. The resistance to the change management objects in the project has consequences to the future benefits of the project.

8. CONCLUSIONS

This thesis has shown how Public Networks are trying to reach better business performance through the integration of information technology and change management. The project is complex and withholds many different aspects and objectives. However, after analyzing the system benefits along with the organizational consequences, it becomes clear that management has not really given the project the acquired resources or status.

Apart from this, Public Networks has not been very profitable with large overhead costs in headcount. Other business areas are smaller and more profitable in comparison. Hence, Public Networks finds itself comparatively powerless in shaping the global processes or speeding up the implementation of R/3, which is an obstacle in their hurry to get things done since their overall survival might be threatened if they don’t perform well in a near future.

When it comes to the system design a lot of design decisions are set, and the features of the systems are aiming at the problems at Public Networks. However, the systems are not fully utilized without streamlining and adapting the organization. Mutually, the systems are to support the organizational way to work. It is in the organizational design that the project faces its’ major obstacles. The political nature of the obstacles can be overcome by communicating the goals for the project throughout the organization.

The failure in doing so can be seen in the different language and terms used by the different departments at Public Networks. In interviews with the staff at Operations for example, a feeling of “us and them” arises, with people of the same business area.

Only through better resources and support from management the project may get passed these initial political obstacles and move on to the job design and enable the business benefits stated by this work.
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Appendix 1

Sub-processes

Marketing:
Market analysis - identifying and evaluating customer needs and business opportunities by analyzing current and potential markets and customers. Information regarding the customer’s business opportunities, economy, politics, competition and trends, forms the basis for market analysis.

Sales:
Proposing – presenting a tender that clearly indicates how Ericsson is able to be a partner in solving the customer’s business requirements.

Negotiation - achieving a contract between Ericsson and the customer which specifies the respective obligations, and forms the basis for a business relationship.

Order preparation - reviewing and verifying the contract with all responsible units within Ericsson to ensure that all commitments, including options concerning time and content of services and products, will be kept.

Supply & Implementation:
Coordination - optimizing forecast capacity, confirm orders and coordinate a breakdown of Order and Product Specification into relevant interfaces for the processes that follow.

Hardware Supply - making hardware products ready for delivery, i.e. manufacture, purchase, assemble and test.

Software Production and Verification - producing and assembling software to a loadable unit and to verify that functionality corresponds with the contract.

Library Specification and Production – industrializing, (structuring the database) specifying and producing a “doc-ware” package.

Distribution - receiving, forwarding and delivering goods.

Network Implementation - implementing delivered products/packages into the network and verifying and testing when required.

Service Supply – providing service products related to and supplementing hardware, software and doc-ware.

Product Management:
Business opportunity tracing - identifying, formalizing and validate relevant environmental signals, market and customer needs, information on competitors, trends in technology, standards etc. In addition, evaluating business opportunities.

Product business realization/Product delivery configuration - compiling consolidated business-oriented planning, budgeting and follow-up of commercial product areas. Carrying
out commercial evaluations of Business & Control products and Configuration products from a product life cycle perspective. Creating a basis for relevant product information and for decision making in co-operation with the Provisioning process.

**Product control and support** - following up development projects and managing daily consultative issues regarding all products in the product catalogue, regardless of position in the product life cycle. In addition, ensuring that all prerequisites are fulfilled in the other processes that enable a product to be managed after inclusion in the product catalogue.

**Substitution** - phasing out products and carrying out issue planning in co-operation with the Marketing and Sales processes and customers.

**Product market information** - supplying the Marketing and Sales processes with required information. This should be current, concise and accurate.

**Product Provisioning:**

**Technology development** - providing information regarding current and new technologies and develop basic hardware and technology platforms, facilitating the design and supply of competitive products.

**System pre-study** - providing technical specifications and conceptual descriptions, enabling a multifaceted evaluation of necessary requirements. Specifications are based on information from the Technology development and Product management processes as well as from market needs and trends. In addition, presenting rough sketches of ordered products or systems and estimate costs and risks related to proposed development.

**Application feasibility study/Platform feasibility study** - proposing implementation strategies for both the Application design and Platform design processes and estimate the costs and risks involved in the development of new system products. Proposals and estimates are the result of a multifaceted interpretation of requirements, based on output from the System pre-study process.

**Application design/Platform design** - developing and testing products that meet customer needs as efficiently as possible.

**Verification** - verifying that products meet the customer’s quality and functional requirements as efficiently as possible.

**Consolidation** - verifying that in-service product quality is acceptable for general use on all markets.

**Customer Services:**

**Service order reception** - analyzing the service order and dispatching it to the appropriate service supply sub-process.

**Customer support** - administering service calls, problem management, escalation routines and modification administration.

**System service** - administering system updating and upgrading.
Network certification - administering network verification and certification.

Customer training - managing course administration, customer training and course evaluation.

Hardware service - administering spare-part logistics flow, swap repair and return repair.

Professional services - administering consultancy and special services.

Operational services - administering a spectrum of services focused on “outsourcing” activities.

Service completion - administering obligations for confirmation and fulfillment of services.