The Role of Rules and Routines in ERP Implementation

- A case study of GE Healthcare in Uppsala

Carl-Henrik Wahlgren

Niklas Persson
Abstract: The purpose of this paper is to investigate how the existing formal rules and informal routines are affected by management accounting change, such as an ERP implementation. This is interesting because, managing a large organization today is a complex task which demands efficient and accurate information systems in order for management to make the right decisions. Because of this demand for faster information spread, organizations have become more willing to spend money and resources on these functions. However the effects may not always be what was intended from the beginning. In this paper we have found that if the implementation is carried out with little regard to the local situation, existing rules, routines and institutions may lead to that employees and management become distanced from each other. This in turn can result in that management loses control over the daily work in some aspects, as employees find ways to work around the ERP system.

Keywords: ERP Implementation, ERP Systems, Rules, Routines, Resistance to Change, Management Accounting Change.

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1 Introduction

Managing a large organization today is a complex task which demands efficient and accurate information systems in order for management to make the right decisions. Because of this demand for faster information spread, organizations have become more willing to spend money and resources on these functions. Enterprise Resource Planning (ERP) systems have in recent years become the most popular information system used by large organizations. The technological aspects and consequences of these systems have been researched substantially while knowledge of the practical use is still fairly low. Going through research about ERPs we have not yet found any paper focusing solely on the practical aspects of the systems.

Implementation of a new ERP system brings new guidelines on how work is to be performed. Each system has its own set of rules which new users need to learn. This affects the users in ways that their routines on how work was performed before the implementation now are challenged. The clash between rules and routines is something that is important to identify since it can affect the organizations efficiency as a whole. If the existing routines created by employees themselves are stronger than the formal rules which the new system brings, resistance to it can occur and slow down the process. Therefore, it is important to be aware of these challenges since implementing an ERP system is a major investment for organizations and must function correctly.

1.1 Background (ERP systems)

Enterprise Resource Planning (ERP) systems are the largest and most demanding information systems used by organizations. The two major ERP system providers on the market is SAP and Oracle. The ERP system is usually the largest single IT investment for the organization and it impacts the greatest number of individuals and is the broadest in scope and complexity (Grabski, et al 2011). The systems are integrated cross-functional systems containing selectable software modules that address a wide range of operational activities within the organizations, such as accounting and finance, human resources,
manufacturing, sales and distribution. In other words, the system enables an enterprise to efficiently and effectively manage its resources within all different functions of the organizations (Grabski, et al 2011).

In the 1990s, ERP systems became rapidly implemented among multinational corporations with the purpose to integrate diverse and complex corporate operations (Grabski, et al 2011). Early accounting systems formed the nucleus for the contemporary ERP systems but were not close to integrating the same amount of data as the systems today (Deshmukh, 2006). Implementation of ERP systems are motivated by management’s demand for timely access to consistent information across the various areas of a company. Motivations for investing in ERP systems include regulatory compliance, upgrading legacy systems, business process engineering, integration of operations, and management decision support. For the individual user of the ERP system it tends to change job role definitions, increases task interdependencies, restricts flexibility in job tasks, and has been shown to lower job satisfaction (Grabski, et al 2011).

1.2 Problem discussion

Because of the changes an implementation of an ERP system brings, employees need to recognize and understand the legitimacy of the systems purpose otherwise the implementation probably will lead to failure (Dillard, Yuthas 2006). Successfully implemented the ERP system can improve efficiency. However, when implemented the wrong way it can damage the organization (Mandal, Gunesakaran, 2003). ERP systems require more disciplined work and introduce more managerial control when organizations today are moving away from rule-based bureaucratic forms towards more decentralized, team-based and consensual post-bureaucratic forms. This creates a dilemma for workers who lose a measure of control over their work and lose the flexibility to solve arising problems in their daily tasks (Strong et al, 2001) This may result in that employees create workarounds that support their local needs (Strong et al, 2001). ERP systems are very complex systems that organizations must implement with care in order for it to work efficiently. Since the system affects all functions within the organization it is important that the purpose of the system is clear throughout the organization and understood by the employees.
1.3 Contribution to existing research

Research within the field of management accounting has grown significantly in recent years and on the way taken somewhat different routes focusing on different areas. The field we are interested in is management accounting, which is a big field with several research disciplines such as sociology, organizational theory and economics (Scapens, 1994). The kind of research we have performed is more towards the institutional aspects together with the technological effects of an ERP system. We have found that a lot of research has been made on the area of ERP systems but we have found a lack of, and also call for papers, for how management accounting systems are actually used and how they affect the organization on a more basic level (Hopwood, 2007).

There is not enough research on the area of the practice of management accounting and the research has become detached from the actual reality of work (Hopwood 2007). Another missing part in management accounting research is a framework for the technical and interpersonal aspects of accounting systems. As early as 1985 this was called for and still today this has not been researched in any comprehensive manner (Malmi, Granlund 2002; Roberts, Scapens 1985). Our research scratches on the surface of this rather unexplored area. Hopefully we will point out the need for more extensive research about the effects of an ERP system implementation on the relations between management and employees.

Several studies have been made about the implementation process of ERP systems, however not many have specifically focused on the use from the different perspectives of management and employees to see how they differ. We hope that our paper will explain the importance of understanding the existing local situation before implementing an information system of this magnitude, and thereby minimizing the distance between management and employees.
1.4 Purpose

The purpose of this paper is to investigate how the existing formal rules and informal routines are affected by management accounting change, such as an ERP system implementation.

1.4.1 Research question

How is an ERP implementation within an organization likely to affect the existing rules and routines? How is this process affecting the relationship between management and employees?
2 Theory

2.1 Choice of theories

In order to analyze and understand the effects of an ERP implementation, we used theories that discuss how changes implemented by management are likely to affect employee’s daily work. Therefore, theories that focus on how people react to changes in work tasks and how routines and institutions within the organization are central for the work are used. These theories combined provide an understanding of how change challenges the existing routines and institutions and how people are likely to react when this happens. To explain this we have chosen institutional theories about how rules and routines function in an organization, where rules are the formal managerial systems and routines are the way things are actually done. We also present theories about how these rules and routines can act as resistance to change when implementing an ERP system. We look at the ERP system as the formal rules which are relatively uncomplicated to change and the routines as part of the organization’s institutions which represent the habitual behavior and coherent values which in turn are harder to change.

2.2 Rules, routines, institutions

Starting with the assumption that employees in some degree always have choices how to carry out their daily work and how to solve problems arising when confronting work tasks, it becomes interesting to look at how they choose to solve them. Moving to management accounting, all the beliefs, assumptions and practices in use are governed by the present institutions in the organization, also defined as;”A way of thought or action of some prevalence and permanence, which is embedded in the habits of a group or the customs of a people” (Burns, 2000, p. 571). The social coherent habitual behavior and actions in the institution becomes formalized routines as the habits are produced and reproduced (Scapens 1994). Routines have also been mentioned as; “The way in which things are actually done” (Burns, Scapens 2000, p. 10). This process of setting routines and building institutions creates boundaries for rationality by restricting the different opportunities and alternatives we
perceive and thereby steering behavior (Barley, Tolbert 1997). Initially however, work has to be guided by some sort of rules which optimally in time gets widely accepted within the organization (Burns 2000). Hence, work does not always get fully routinized and institutionalized; this is when things work optimally (Burns 2000). An ERP system with its procedure manuals can be seen as a formal managerial system comprised by rules set by management (Lukka, 2007). While the routines created by employees are the way in which things are actually done, as cited above. This makes it clear why it is important, when trying to achieve management accounting change such as implementing an ERP system, to get a thorough understanding of the organizations current situation and especially its routines and institutions, otherwise the implantation may face substantial resistance (Burns, Scapens 2000).

For example, when implementing an ERP system the rules that follow with the procedures will make people work in certain ways. By repeatedly following these rules the behavior becomes programmatic and after a while based more on tacit knowledge. This behavior is what constitutes the routines. The process of routinization will modify the previous formulated rules and the employees will, deliberately or not, create their own ways to work, other than what management explicitly expressed in the formal rules of the system (Burns, Scapens 2000). The theories of routinization is not from the beginning intended for ERP system implementation but can be linked to any process of work rule alternation.

What the section above is educating the reader about is the relation between management and employees. Where employees represent the routine based everyday work and the way in which things are actually done i.e. they represent routines and the existing institutions. The management is connected to the rules of the organization because of their decision making role. Looking through this perspective may help explain why there is a gap between how management experiences work and how employees perceive it.

2.1 Resistance

Resistance to change is mainly an effort to maintain the status quo. It is a behavior among people in an organization put up to protect from the perceived effects of real or imagined threat. Graetz et al (2006) describe resistance to change as barriers arising from challenges to cultural norms and institutionalized practices. Difficulties and times of uncertainty within the organization can arise when new systems challenge the existing
routines and institutions. Therefore, implementing an ERP system that affects all sectors of the organization is a sensitive process.

Existing routines and institutions in the organization can act as a barrier to change since it challenges new systems that will affect how the work is done (Granlund & Malmi 2002 p.302). Implemented change, such as an ERP system, in an organization without change in institutions may result in resistance and failure of implementation. On the other hand, management accounting change which is consistent with the existing routines and institutions will be easier to achieve than change which challenges those routines and institutions. However, in either case, the new routines which emerge will be influenced, to some extent, by the existing routines and institutions (Scapens, 2000). Kasurinen’s (2002) focused on three barriers to accounting change: confusers, frustrators and delayers. Confusers are factors that create uncertainty about the project’s future role in the organization and gives rise to different views on change. Frustrators refer to factors that suppress the change process, such as existing systems and the organizational culture already in place. Delayers are factors that slow down the change process, such as the lack of clear strategies, communication and information. It is therefore a crucial time for organizations and also important to take the “barriers to change” into consideration. Kasurinen’s revised accounting change model can be a useful “tool” in order to analyze the context of change at the early stages of a project (Kasurinen, 2002). To ensure smooth implementation, the need for proper explanation for change must be provided and the interest of those that might be affected should be protected (Agboola & Salawu 2011).
3 Method

The coming section will describe how we gathered information and what perspectives we used. Because of the problem in our study we had to investigate the case from two perspectives.

3.1 Strategy

Since our study is focusing on the relations between the formal rules and the informal routines it was vital for the research to capture the routines from a user perspective and also get an understanding of the rules incorporated in the system. Because of this, the routines were best investigated through interviews with those who carry out the daily work in the case company. The company had to be sufficiently large enough for the departments to work at some distance from each other. This enabled us to see differences in relation to management and also how the different departments coped with the change of rules embodied in the new system. Through the interviews we wanted to capture how the change of rules conflicted with the existing routines. We also wanted to see if the routines had been adapted to the implemented rules and how the employees reacted to this change.

3.1.1 Choice of case company

As mentioned in the strategy section we had to chose a large enough company in order for our research to be valid. If the company would be too small there would be some probability that the phenomenon we wanted to find and research is non existent. This is an assumption based on that our research problem is not evident in smaller companies where management and employees work closer together. Due to these circumstances, we chose GE Healthcare in Uppsala as our case company since it is a large multinational company which in recent years has had experience in implementing ERP systems because of GE´s acquisition of former owner Amersham who previously ran the site. These shifts in both ownership and systems have changed the rules dramatically for the employees which have made it interesting to research the outcomes from the new rules.
3.2 Information gathering

We started our information gathering by talking to a highly experienced consultant who works for one of the leading ERP system provider on the market to broaden our understanding of the implementation process of the ERP system. This discussion took place in Uppsala April 19th and April 28th 2011 lasting approximately one hour each. This was not an interview and will not be treated further in the paper. She has been involved with ERP implementation at several large companies’ worldwide and merely provided us with information about how the process was built and how organizations and its employees are affected by the change. This helped us to choose direction for our investigation and which people we needed to talk to. The reason for this was to get a solid knowledge foundation of the whole process of ERP system implementation. This information gave us an understanding of the affects these systems may lead to, both negative and positive. The information also helped us narrow down our topic of research and what we wanted to focus on. The consultant also assisted us with good contacts at the case organization.

We then decided to conduct qualitative semi structured interviews with two persons working at different departments within the case organization. The interviews were the primary source of information for our research. The secondary information consisted of different documents from the ongoing implementation process, such as lists of benefits and guidelines, formalized by management of the whole GE Healthcare division. Since our research problem demands information about rules and routines this was necessary to investigate.

Both interviews took place at GE Healthcare in Uppsala on Thursday may 12th 2011 with Hans-Åke Thillman, Manager Chemical Manufacturing System Support, and Michael Athens, Lead Super User Oracle ASCP (Advanced Supply Chain Planning). Both interviews lasted one and a half hour. In the text below we will refer to Hans-Åke Thillman as HÅ and Michael Athens as MA. Both HÅ and MA has experiences the shift in corporate governance and ERP system at GE Healthcare previously Amersham. Therefore they were relevant to interview for our research.
3.2.1 Reliability

The information we got from our interviews originates from employees at GE Healthcare in Uppsala. Since Amersham was acquired by GE there was a revolutionary change in many aspects of work for the employees. This is something which may have influenced the answers that we got from the employees because of personal attitudes towards the change in corporate governance. The information was relatively straightforward and was backed up with charts and documents which supported the views of our interview subjects. The documents formalized by management of the ERP implementation process were positive and lots of benefits were identified. A reason for this may be that management wants the system to work immediately after installation with low costs involved. Another reason may also be that they have not been informed of the problems with the system because of that the organization is big and it takes time for the information to reach the top management.

3.3 Method discussion

When choosing our case company we realized that there was going to be a big challenge to get a fair view from both perspectives rules and routines. The routines are identified by interviews and the answers in an interview are always subjective. However, we chose to interview the employees because we wanted to capture their informal reality i.e. the routines. Routines are something that is hard to research from formalized documents since they are created by employees and are not encoded but more tacit. To capture the rules which are embodied in an ERP system, we researched different documents such as benefit plans and also talked to a consultant who has been involved in the project and who worked together with management during key parts of the implementation. Information about the rules and management is hard to investigate since not all of it is accessible for the outsider.
4 GE Healthcare

4.1 Company overview

Because of the size of our case company General Electric Company (GE), it is important for the reader of this paper to get a clear picture of what they do and how the organization is built. GE Healthcare is just one of many branches in the GE group. This section will explain the GE group and the healthcare branch based on public information gathered from GE’s homepage.

The group has seven branches: global and growth operations, energy, capital, home and business solutions, healthcare, aviation and transportation, which are all spread over the world. In 2009 GE delivered $11.2 billion dollar earnings. The history of the company started with Thomas Edison back in 1878 that started Edison Electric Light Company which later merged with Thomson-Houston Electric Company to create General Electric Company. Today the company has grown to a hundred and sixty locations worldwide with 304 000 employees as of December 2009. Headquarters is located in Fairfield, United States (General Electric, 2011).

Fig1. Organizational chart of General Electric Company, with the Uppsala site included.
GE Healthcare is one branch within the American multinational conglomerate General Electric Company. GE Healthcare has a range of products and services that include medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, and biopharmaceutical manufacturing technologies. Globally, GE Healthcare’s annual turnover is approximately $17 billion and has more than 47 000 employees in more than 100 countries. This case study was performed at GE Healthcare Life Sciences division, headquartered in Uppsala, Sweden. This division produces technology for drug discovery, biopharmaceutical manufacturing and cellular technologies (General Electrics 2011).

4.2 Employees Interview

Before GE’s acquisition of Amersham, the ERP system in use was Movex. Movex is a system designed by the Swedish company Intentia. According to both HÅ and MA, Movex was a system designed to make work more efficient for the users and made it possible for employees to create own routines while still working in the system. Since Movex was a locally based ERP system provider they worked fairly close with Amersham in helping them updating and correcting errors that came up. When GE became the owner in 2006 they immediately changed ERP system at their office in Uppsala to Oracle, which was used within the rest of the organization. The implementation was more or less forced upon the site in Uppsala HÅ argues, and the process took approximately two years.

HÅ was between 2004 and 2006 responsible for replacing Movex with Oracle and putting it to use at GE Healthcare chemical production unit. Today he is responsible for the use and development of the system and holds strong beliefs about that today, five years after the implementation the system is still not working as it should. The purpose of implementing an ERP system like Oracle is to shorten the OTR (order to remitted) time he says and this has not really been the case with GE healthcare in Uppsala. OTR is the time it takes for an order from a customer, to go all the way through GE Healthcare and to be delivered and confirmed, because of various reasons that HÅ and MA identified during the interviews (HÅ, MA, 2011).

MA describes that the first stage of the implementation process was the Conference Room Pilot 1 (CRP1) where management and people from the local site together
performed a GAP analysis between the old system, Movex, and the new system, Oracle. When they found the gaps in their analysis they made up a list of demands of what the new system had to include. The next step in the process was the CRP2 which included testing of the new system to see if the demands were met and that the processes were actually functioning correctly. Daily users of the system were the once testing in order to get accurate results and input. After CRP2 they made a final process, the I-test, which is based on actual work tasks with real information. This step shows if the system can function live and if anything needs to be changed (MA, 2011).

According to the interviewees, rules for how work was supposed to be done changed drastically after the new Oracle ERP system was implemented. They also experienced that their routines were challenged by the new system. The previous system Movex was, according to them, more user-friendly, flexible and built to suit the actual user of the system. The new system made by Oracle however, was built more toward the end user of the system, in this case upper level management. According to the interviewees, the most obvious shifts in rules and routines were:

<table>
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<th>Change in routines</th>
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<td>The new system was more hierarchic. It was not built for the actual user; instead it was designed to make it easier for upper level management to see the end data. “The user became the messenger”, as H-Å put it.</td>
</tr>
<tr>
<td>The employees experienced a dip in creativity since the system did not allow them to do and solve tasks on their own.</td>
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<tr>
<td>Rules on how to perform work tasks became more strict and complex with the new system and therefore people did not follow the processes strictly since the system was complex and time-consuming.</td>
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<td>Users experienced that the new system was “forced” upon them without clear information and communication which created resistance to the change.</td>
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<td>The system was in English which was difficult for some people since the</td>
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previous system, Movex, was in Swedish which also created resistance to the change.

Employees did not feel support from management in solving existing difficulties in the system, “work around it” and “it is too expensive” was frequent answers.

Lower level employees felt that they were not a part of the decision making process.

Oracle did not have the same functionality as Movex and an external system called ClearOrbit had to be installed where users plugged in data which was then transferred to the main system.

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<th>Table 1. Information from interviews with Hans-Åke Thillman and Michael Athens 2011.</th>
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When Oracle was implemented in the company a golden copy was bought. This meant that GE had a license to make alternations in the system on their own initiative without the help from Oracle (HÅ, 2011). The primary system implemented was basic with limited adoptions to the operational aspects of the company. This was to be developed by the IT architects of GE Healthcare in collaboration with management. HÅ who represents the user side of the system claims that it is a constant battle to get the functions needed from the IT department and management, but the requests are not often met (HÅ, 2011).
Fig2. Simplified chart showing the ERP system at GE Healthcare in Uppsala, with the external solution ClearOrbit included.

Users within GE Healthcare quickly discovered that there were some modules missing for accurate information to be processed into the system. Since GE Healthcare are dealing with highly sensitive and expensive products that demand specific storage it is necessary that the information that passes on is correct. However, these set of rules were not easily transmitted in Oracle and demanded extra work from the users (MA, 2011). After a lot of complaints to management and consultants, GE installed ClearOrbit supply chain management software, which had the applicable components necessary to ensure that the data sent, was accurate (MA, 2011). ClearOrbit made it possible for the user to plug in data and not having to worry if it was wrong, because then the system would warn. Without ClearOrbit, the user would have to find the exact location for each product in the system which would be time-consuming and also increase the risk of failure. ClearOrbit was first responded with negativity from management that wanted the employees to “work around it” and “find solutions” (HÅ, 2011).

Another external solution was also implemented as a complement to Oracle since the system could not show all information correctly as intended. HÅ showed that the mainframe system was not entirely connected with all it’s different clients and therefore it was impossible for users to access every part of the system. To solve this they had to install
one further system called ClikView, which could extract information from all of the system (HÅ, 2011).

4.3 Management

The ERP system at GE Healthcare is constantly being updated with new patches to improve and to put new functions to use. Based on a list of benefits compiled by management together with the system provider Oracle, the management perspective will be presented in this section. The benefits was in general changes in rules for the use of the ERP system that will either change lead time or save money for the company (Benefit plan CRP1 GE Healthcare, 2011).

<table>
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<tr>
<td>As mentioned above the mainframe system by Oracle was complemented by another system called ClearOrbit which could insert information to the system. This system was built on rules so that no mistakes where made. For the new patch GE healthcare management wanted to replace ClearOrbit completely to save money.</td>
</tr>
<tr>
<td>Another benefit which the management sees is an increase in visibility and simplifying decision making for planners. In other words management is trying to get more insight in how rules are followed in the daily work.</td>
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<tr>
<td>In order to shorten lead time, management wants to improve the integration between the Advanced Supply Chain Planning and the Oracle Process Manufacturing. This means that the time from planning to manufacturing will be shorter if the benefits are realized with the new patch.</td>
</tr>
<tr>
<td>Management also wants to constraint resource planning with the new patch to shorten lead time further. These rules will help management getting more reliable delivery dates.</td>
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Better inventory management, control and ownership to save money.

Less manual monitoring by employees will save administrative time.

Schedule Count according to demand to save money.

Picking inventory based on lot expiration or creation date will save money by reducing wasted inventory.

Reduce modifications such as ClearOrbit as mentioned above to save money.

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Table.2 Information from benefit plan 2011.
5 Analysis

This section will be an analysis of our empirical findings based on our proposed theories. We will provide evidence of our theories relevancy in our case study.

5.1 Rules and routines

Looking at the ERP implementation process at GE Healthcare it is clear to see that the change in rules when they implemented Oracle was extensive. When Movex was in use the corporate governance was controlled by Amersham with their perspective of how work was supposed to be done. When GE acquired Amersham they brought a whole new business and governance culture since they are a large American global conglomerate. This meant that they changed the rules for how work was supposed to be performed by implementing a new ERP system.

Social coherent habitual behavior creates routines which in turn builds institutions as the routines are produced and reproduced as stated above. The existing institutions within former Amersham where built upon beliefs that the system should be adapted to the user and not the other way around. The management supported these beliefs and employees felt that they were in control of how to solve arising problems. Also this helped improve the relation between management and employees and little resistance was created. With Oracle the employees was told to find workarounds and solve the problem without support from the system provider or management in opposite to when Movex was in use, when the system provider worked to solve all emerging problems the users experienced with the system. Routines that were built on the old institutions now had to be changed. By changing to Oracle the new management did not see problems with the systems because of all the workarounds and thereby they could only see the positive effects, and therefore found the implementation successful.

The ERP system represent the formal managerial system with rules and guidelines set by the management and the routines the things are actually done, as stated above. This again makes it clear why it is so important, when trying to achieve management accounting change such as implementing an ERP system, to get a thorough understanding of
the organization’s current situation and especially its routines and institutions otherwise the implantation may face substantial resistance. As HÅ said the employees did not feel the support they needed from management as they were told to work around arising problems. When implementing the ERP system at GE healthcare what was missing and still is missing is the understanding from management of the work procedures in the production, the way in things are actually done. The new system was also more hierarchic. It was not built for the actual user; instead it was designed to make it easier for upper level management to see the end data. “The user became the messenger”. HÅ and MA demonstrated that the system from the beginning was pushed down from management with no or little regard to the actual users of the system. One example of how management was trying to push down the system was the effort to constraint resource planning. This was found complex and time consuming by the employees and was therefore not strictly followed.

All these factors mentioned above are preventing the optimal routinization of work and for new habits to evolve and thereby the old institutions may not change. Optimal routinization is when employees are in line with the rule change and routines are not deviating too much from these rules. When this does not work accordingly it may entail that employees will try to work in the same way as before and not in the way the new system is designed. The behavior to work in the same way as before can be working against the purpose of the ERP system and in coming section resistance to change among employees will be treated.

5.2 Resistance

Resistance to change is likely to arise from challenges to cultural norms and institutional practices. The first challenge to cultural norms was the acquisition of Amersham by GE. Current cultural norms became challenged when a new owner took over control. GE brought a new corporate structure and governance which in itself is a major change from the existing one. Beside the acquisition, the employees within the case organization experienced a shift from a local and smaller ERP system to using a major system, Oracle, which integrated all of the organization’s divisions. This was a major change that affected all of the employees within GE Healthcare at the Uppsala site. One can clearly detect resistance to this change when confronting employees about the implementation. The previous system, Movex, was a modern system and was customized to fit the organization at the time. People were therefore unsure to why change was necessary when they already had a well functioning system in
place. The system was updated frequently and employees were overall satisfied with the system and the support they got.

When GE acquired Amersham and a new system was implemented, people showed resistance because of the changes it would lead too in work attributes, routines and rules. From interviews it was shown that the new system was seen to be more hierarchical, i.e. it was designed to help upper level management to get accurate information. This was met with resistance from the users since they felt that they were being neglected and merely became messengers of information. Existing routines and institutions in the organization can act as a barrier to change since it challenges new systems that will affect how the work is done. In the case organization, people felt that after implementation the opportunity to work individually and in their own ways disappeared because the new system was more rule based and static. The previous system allowed the user to be more creative and come up with own ways of working in the system. Another way in which users showed resistance was feelings of neglect from upper level management. The users felt that their remarks about the system did not get any attention and were not dealt with accordingly. They were also reluctant to the new system because it was in only in English and not applicable in Swedish.

Before implementation in 2006, upper level management at GE and local users at the Uppsala site conducted various tests in order to ensure the functionality of the system. The first step was to create a project group and discuss the gaps between the previous system, Movex, and the new one that was going to be implemented, Oracle. The project group consisted of consultants from Oracle together with people from GE’s site in Uppsala. The users made a list of demands that the new system needed to have in order for them to be able to work as before. After the list was done, tests to ensure functionality was done. However, when functionality was ensured, the users felt like they were left alone. They have had a lot of remarks and complaints after the implementation and argue that communication and willingness to help has been little. Management and consultants from oracle has mostly responded with “work around it” and “it is too expensive and is time consuming”.

When analyzing the findings of resistance in the case of GE Healthcare by using Kasurinen’s barriers to change model we have been able to identify all of the barriers; delayers, confusers and frustrators. Confusers in the case company can be identified as the uncertainty by employees about the need for a new ERP system and its function within the organization. They were pleased with the previous system which, according to them, was
more “user-friendly” and therefore uncertainty about what the new system would lead to existed. Frustrators, which refer to factors that suppress the change process, can also easily be detected through our research. Factors such as the existing culture within the organization are now being challenged because of the new ownership, current rules and routines on how work is to be performed is also challenged. These are the two main factors that will hold back or suppress the change process. Delayers have been identified as the conflict between management and employees about correcting existing misfits in the system. The lack of clear communication between management and users of the system is evident in the case company which by itself delays the change process. Employees argue that they felt that the new ERP system was pushed onto them without enough information about the consequences it would lead to regarding work attributes. All of these barriers can interestingly be traced back to the routines. The employees discovered that their routines at work were now being challenged by this new system and therefore showed resistance.

5.3 The relationship between management and employees

Getting insight to the ERP implementation process at GE Healthcare provided us with a picture of what factors affected the relations between employees and management the most. We outlined the general changes in rules and routines and further how this change created a resistance among employees. This section will deal with the relationship between management and employees that existed before implementation and the effects that the new ERP system had on it.

Starting with rules and routines it is obvious that when Movex was in use the distance between management and employees was smaller. The users of the old ERP system worked closer to the system provider and management and usually got what they asked for. The previous management was in line with changes in the system and did not deny employees functions that were requested. At this time the management and employees seemed to be working closer to each other. In contradiction to this relation, the reality today is that the company is bigger because of that today they belong to a big American based Group, General Electrics Company with their set of rules of how to run the operations.

The new rules demanded a great change in previous routines since management bought a Golden Copy and therefore little or no help would come from the system provider as before. Alternations and developments in the system were now supposed to be done in-house
in order to save money and time. By detaching management from the decision process of the system’s future development the IT department were in charge of the system as HÅ meant. This may have increased the distance between management and (employees) users of the system.

Fig3. Illustration of how the ERP implementation at GE Healthcare Uppsala distanced employees from management, through the deviation of rules and routines creating resistance to change.
6 Discussion & conclusion

6.1 Recap

The aim of this paper was to investigate how the existing formal rules and informal routines are affected by management accounting change. We decided to perform a case study at GE Healthcare in Uppsala since it had the characteristics that we wanted to be included in our study; a large global company that had experienced sufficient changes in work attributes, both a shift of ownership and a change of ERP system in recent years. We decided to focus on theories regarding resistance to change among employees and how existing rules and routines can function as barriers when implementing a new ERP system. Also theories that explain routinization and institutionalization in an organization were used to explain how rules can differ from routines used by employees.

6.2 Findings

Findings from interviews with employees at the case company showed that resistance to change definitely existed and was presented in various ways mentioned in the analysis. Resistance was shown immediately when being informed of the new system. Employees felt neglected in the implementation process and that they were being forced into using this new system even though they already had a modern and well functioning system through which they had created their own set of routines to work from. The new system was not as flexible as the previous one which made users feel that work had become more static and less creative.

Cultural differences were also something that was acting as a barrier to change. People interviewed at GE’s site in Uppsala described the implementation process as very hierarchic and “American”. It was hard to get feedback during times of uncertainty and management wanted them to rather “work around” problems than fixing them. The new system was also in English compared to the previous system which was in Swedish; this was somewhat a challenge for users not used to working in a different language.
From a management perspective at GE, no other option existed than implementing Oracle at their site in Uppsala since the rest of the organization used it for integrating data among the rest of its sites worldwide. However, employees argue that management did not spend enough resources in locally adapting the system so it would fit their existing cultural norms and routines. Instead they felt that the process could have been more democratic to get more people “on board” in the implementation process. Even today, five years after the implementation employees argue that issues remain that were addressed early in the process.

6.3 Discussion

Overall, the distance between management and employees has increased with the new system. Management has interest in keeping the organization profitable and wants to be able to control the organization’s resources and capital. For them, Oracle is a tool that makes it possible for them to overlook a giant organization’s all divisions and binding that information together. For the daily user however, this system is the set of rules that he/she must follow in order for the job to function. Because the employee is so bound to the system, each change in it brings new ways of performing the job, rules and routines. Therefore, this is a sensitive process and as shown from our paper, resistance is likely to occur.

In a large organization, like GE Healthcare, it is understandably expensive and time consuming for management to spend resources on keeping a close contact with each site on a regular basis. However, what we have found lacking in this case is precisely that, clear information and communication. In the case of GE Healthcare in Uppsala, communication has mostly gone downstream, from management to employees and this has created resistance to the changes because users feel that they have not been given the chance to influence the project’s characteristics. If management would have listened more closely to the needs and wants of the people affected by the change and focused more on locally adapting the systems the resistance to change might have been less clear to detect.

Rules and routines from previous system could have been transferred into the new system and also make work more effective in the long run since that would contribute to creating more satisfied workers. Today, employees argue that they sometimes work around the existing system because it is too complex and different from the previous. Since the main purpose of an ERP system is to make work more effective and information more visible,
resistance from workers might actually contradict this and instead make the system ineffective.

6.4 Conclusion

GE’s acquisition of Amersham brought not only a new management, it also meant changes in how the daily work was performed at various departments. The new ERP system implementation together with the new corporate governance meant revolutionary changes which brought new rules that challenged the existing institutions and routines. These challenges created resistance to change among employees who felt forced into using the new system since they did not see the benefits from it. From our research we can conclude that an ERP implementation challenges the existing routines and as an effect creates resistance to change among users which slows down the process. A new ERP system means new sets of rules to work from and as shown in this paper’s case study the new system was not enough locally adapted to suit the cultural norms and routines already in place. Because of the resistance to change among employees, they distanced themselves from the ERP system by using their own workarounds and thereby also distancing themselves from management. Since the main purpose of an ERP system is for management to have control over the organization’s resources, this distance between employees and management is eroding the ability to have full control.
7 Reference list


8 Appendices

8.1 Appendix 1 - Interview questions

- Hur såg arbetssättet ut innan affärssystem?
  - Vilka regler och styrdokument fanns?
  - Hur uppfattade ni att de anställa utförde sina arbetsuppgifter – speciella rutiner?
  - Vad är det centrala och viktigaste arbetsuppgifterna för den här funktionen?
  - Vad har blivit bättre? Brister då och nu?
  - Är det något du saknar med det nya systemet?
  - Vad är det bästa med systemet från ert perspektiv?
  - Hur förändrades arbetssättet i det stora hela?
  - Vad tog längst tid arbetsmässigt innan implementering vs. efter?
  - Har ni kunnat dra ner på anställda tack vare systemet?
  - Hur mycket arbetar ni i systemet dagligen?
  - Hur rutinbaserat är ditt arbete?
  - Hur mycket känner du att du själv kan styra över dina arbetsuppgifter?
  - Beskriv avdelningens arbete och vad syftet är inom organisationen?
  - Hur många arbetsrutiner har ni själva skapat? Vilka finns kvar sen innan implementering?
  - Har arbetet blivit mer effektivt?
    - På vilket sätt?
### 8.2 Appendix 2 - Benefit plan

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Saving ( $,Lead time,FTE time)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improved integration between OPM &amp; ASCP - better plans.</td>
<td>Lead time</td>
<td></td>
</tr>
<tr>
<td>Graphical GANTT representations of Plans with drill down functionality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constraint resource planning</td>
<td>Lead time</td>
<td>More reliable dates</td>
</tr>
<tr>
<td>Increase visibility and simplify decision making for planners</td>
<td>FTE time</td>
<td></td>
</tr>
<tr>
<td>One Item master, decrease administration and simplify Item creation</td>
<td>FTE time</td>
<td></td>
</tr>
<tr>
<td>as well as removing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>To replace main part of Clear Orbit</td>
<td>$</td>
<td>Annual develop &amp; license</td>
</tr>
<tr>
<td>Possibility to obtain compliance thru Oracle for EHS,QMS and Finance</td>
<td></td>
<td>Less monitoring and investigations due to ISOWLE</td>
</tr>
<tr>
<td>by combining WMS and R12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gives the possibility to simplify moves between Process-&amp;Discrete</td>
<td>Lead time, FTE time</td>
<td></td>
</tr>
<tr>
<td>Inventories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Better inventory management, control and ownership.</td>
<td>$</td>
<td>OBSO, Lots on Hold</td>
</tr>
<tr>
<td>Support simplified Cycle Count process</td>
<td>FTE time</td>
<td></td>
</tr>
<tr>
<td>Improvements related to sub-inventories support planner/buyer</td>
<td>$, FTE time</td>
<td></td>
</tr>
<tr>
<td>procure decision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less manual monitoring …..could be scheduled thru Oracle</td>
<td>FTE time</td>
<td></td>
</tr>
<tr>
<td>Schedule Count according to demand ( Value, Frequency)</td>
<td>$</td>
<td>Reliable information</td>
</tr>
<tr>
<td>Automated allocation on batch - FIFO pick in Whys</td>
<td>FTE time,$</td>
<td>Less obsolete</td>
</tr>
<tr>
<td>Picking inventory based on lot expiration or creation date</td>
<td>$</td>
<td>Less obsolete</td>
</tr>
<tr>
<td>Min max planning to automate transfer of material from the Raw material</td>
<td>FTE time</td>
<td>Minimize waiting time in production</td>
</tr>
<tr>
<td>sub-inventory to the WIP sub-inventory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Able to use standard Oracle. Less issues at future Oracle release</td>
<td>FTE time</td>
<td>Less verification &amp; testing</td>
</tr>
<tr>
<td>project</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less admin for maintaining documentation ( MD´s,UAT)</td>
<td>FTE time</td>
<td>Many hours spend as part of release project activity</td>
</tr>
<tr>
<td>Reduce modifications ( Clear Orbit, Reports)</td>
<td>$</td>
<td></td>
</tr>
</tbody>
</table>
8.3 Appendix 3 – ERP system at GE Healthcare

What is ERP and Oracle?

- Regional ERPs (JDE)
- Translator (Amtrix)
- Order Management
- Planning
- Sourcing
- Finance
  (Accounts Receivable, Accounts Payable, Inventory, Fixed Assets, Project Accounting, General Ledger)
- Magic
- Scope
- Business Intelligence (ClikView)
- Forwarders (Pway, Hongkong)
- Warehouse (MS Uppsala)
- Manufacturing
  - Uppsala
  - Umeå
  - Maidstone
  - Cardiff
  - Tonglu
  - W-boro

8.4 Appendix 4 – CRP Testing

Tidplan R12 OPM 110418
(Go-live FW32.1. iTest entrance criteria meet FW18.5)

CRP1
- The first step in the Oracle design process, gap analysis against requirements.
- Testing – conducted by ME (Module Expert) /Technical teams

CRP2
- Super users & MEs to test the system (Standalone & Customization Scripts)
- Basis for the production build

ITEST
- Based on a full build
- Testing of interactions with other interfaces & components (Integration Testing)
- Super users & MEs E2E (End-to-End) Acceptance testing

Sanity Testing
- Weekend prior to Go-live
- Testing to verify the production system is set up properly, before the system is open to all end users