

# Scandinavian Journal of Information Systems

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Volume 25 | Issue 1

Article 1

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6-30-2013

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### Recommended Citation

Svejvig, Per and Blegind Jensen, Tina (2013) "Making sense of enterprise systems in institutions: a case study of the re-implementation of an accounting system," *Scandinavian Journal of Information Systems*: Vol. 25 : Iss. 1 , Article 1.

Available at: <http://aisel.aisnet.org/sjis/vol25/iss1/1>

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# Making Sense of Enterprise Systems in Institutions

## A case study of the re-implementation of an accounting system

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**Abstract.** Whereas previous research provides a number of accounts of failure prone enterprise system (ES) implementations, empirical evidence of the re-implementation of an accounting system in a Scandinavian high-tech company shows how the system became highly integrated, accepted by its users, and well-aligned to the work processes. To learn from this case study, we investigate the interactive and dynamic relationships among the enterprise system, people and institutional properties. We investigate the institutional structures and the sensemaking processes at play to identify how the idea of an efficient accounting system travelled from a national to a local level, how the system moved from being highly customized to becoming a standard package and how the users' enactment of the system reinforced existing institutional practices. Based on the findings, we frame our contributions into five lessons learned: (1) An ES implementation entails mutual adaptations between the organization, human actors and enterprise system; (2) "small is beautiful" is almost a truism but may turn out to be an appropriate starting point; (3) a certain level of resilience is essential to cope with future upgrades and enhancements; (4) the recognition of professional identity and roles is vital for ES adaptation; and (5) first customizing and then un-customizing the ES may be a valuable approach towards integrating the system. We relate these lessons to ES adaptations in general in discussing the study's contributions and implications.

**Keywords:** Enterprise system, accounting system, adaptation, structural model of

Accepting editor: Samuli Pekkola

© Scandinavian Journal of Information Systems, 2012, 25(1), 3–36





technology, institutional logics, sensemaking processes.

## 1 Introduction

Since the beginning of the nineties, enterprise systems (ES) have become a major trend in both private and public sectors as organizational solutions to the growing tendency of globalization, mergers, and acquisitions, as well as a way to optimize and improve business operations (Häkkinen and Hilmola 2008). ES implementations often trigger major organizational changes, at the same time introducing high risks with a potential high reward (Chae and Lanzara 2006; Markus 2004). While several companies have gained an important increase in productivity and speed (Häkkinen and Hilmola 2008), others have experienced failure prone ES implementations (Grabski et al. 2003; Sumner 2003). Still others have highly overestimated the value of enterprise systems (Davenport 1998; Robbins-Gioia 2002), realizing that the benefits do not materialize. Adding to this, we know from other case studies (Hanseth and Braa 1998; Lindley et al. 2008) that enterprise systems already in use might prevent future optimizations in organizations due to the rigidity built into the systems.

The missing organizational fit (Sumner 2003) or lack of alignment between the enterprise system and the organization (Grabski et al. 2003) has long been recognized as explanation of some of these problems (Sia and Soh 2007). Studies have paid attention to the fundamental problem of misalignment by understanding the critical nature of the ES adaptation process (Hong and Kim 2002; Lucas et al. 1988; Swan et al. 1999; Wei et al. 2005), including the sources of misfit and misalignment (Gosain 2004; Soh and Sia 2004). The term *ES adaptation* is here used to imply that organizations, human actors and enterprise systems *adapt* to each other in a reciprocal way during design and use (inspired by Henfridsson 2000; Tyre and Orlikowski 1994). This is a complex process, as enterprise systems are large-scale organizational systems built around packaged enterprise systems software that enable an organization to automate and integrate a comprehensive part of its business processes, to share common data and practices, and to produce and access information in real time (Seddon et al. 2003). These processes are far from trivial.

Contrary to the existing literature on non-adaptation and misalignment, empirical data from the re-implementation of an accounting system in a Scandinavian high-tech company, SCANDI, show evidence of a system that is highly integrated, accepted by its users and well-aligned to the work processes in the finance department. We wish to understand the mechanisms at play that have led to this outcome and thus we zoom in on the interactive relationship among the accounting system, the users and the contextual properties. This is done to answer our overall research question: *What can we learn from this particular case study to inform future ES implementations?*

To best address this question theoretically, we include social, organizational, as well as technological aspects (Barley 1986; Chae and Marshall Scott 2005; Doherty and King 2005). For this purpose we find the Structural Model of Technology by Orlikowski (1992) particularly useful, as it embraces 'institutional properties,' 'human actors' and 'technology.' We integrate these three concepts in our analysis and refine them by asking the following sub-question: (a)



*What role do institutional structures play in setting the agenda for the ES implementation and use?* We approach this question by building on central concepts from Institutional Theory to identify how the idea of an efficient accounting system has travelled from a national to a local level and how the system has moved from being highly customized to becoming a standard package. In addition to investigating how the institutional structures impact the ES adaptation, we are interested in analyzing how the accountants' enactment of the system has reinforced and/or changed existing institutional practices. We thus ask: (b) *What are the sensemaking processes at play among organizational members to enact the ES in the local context?* To address this question, we rely on concepts from Sensemaking Theory related to identity, enactment and bracketing. By way of answering these questions, we relate our findings to ES adaptations in general, thereby contributing to the existing knowledge base in this area.

The rest of this paper is organized as follows. The next section describes the Structural Model of Technology adapted from Orlikowski (1992), with a particular interest in institutional structures and sensemaking processes. The research methodology is then reported, followed by a presentation and analysis of the findings. Based on the insights gained from the case study, we frame our contributions into five key lessons learned. We conclude the paper with a discussion of the implications for research on ES implementations in general.

## 2 Towards a dual structural model of enterprise systems

Tyre and Orlikowski (1994) argue that understanding technological adaptation is critical as the operating efficiency achieved by a system depends on users' modifications of it and the corresponding adaptation of the physical and organizational context. We agree with this observation, and thus build on the structural model of technology by Orlikowski (1992) to investigate the mechanisms at play in an ES adaptation process where: (1) technology is an outcome of creative human design processes embedding interpretive schemes (rules), facilities and norms (design process). Human actors appropriate the technology by assigning shared meaning to the technology and then sustain the technology through ongoing maintenance and modifications (use process); (2) technology facilitates and constrains human action, but only to some extent, as human agency implies the possibility for humans to act otherwise; (3) the interaction between human actors and technology is influenced by the institutional context (organization and environment), which both facilitates and constrains the interaction (like the technology itself); and (4) humans' interaction with the technology impacts the institutional properties by either reinforcing (more typically) or transforming these (less frequently).

The key principle of the model is to demonstrate a reciprocal interaction between human actors, technology and the organization that reinforces and transforms all three elements in a continuous manner. This is illustrated in Figure 1 below where we have adjusted the model to fit to an ES adaptation process.

Arrows 1-4 show the relations between institutional properties, the enterprise system and human actors in both the supplier and customer organization. The design process in the sup-



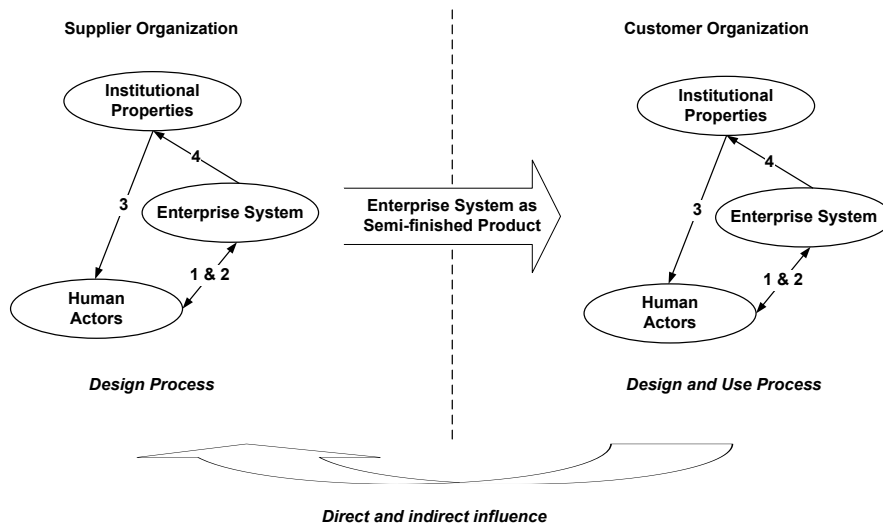


Figure 1: The dual structural model of enterprise systems (Adapted from Brehm and Markus, 2000; Orlikowski, 1992)

plier organization results in an ES as a semi-finished product, which stands out as “a complete, though flexible, ready to implement solution” (Soh and Sia 2004, p. 376), thus crossing the border to the customer organization. The system is then configured and customized through another design process depending on the perceived gap between requirements and functionality provided by the semi-finished product. The dual design processes followed by the use process are repeated as new releases of the system are produced—as reflected by the arrow ‘direct and indirect influence’ between the supplier and the customer organization (Brehm and Markus 2000).

The dual structural model of ES provides a framework that can guide us in the theorization of the dynamics that exist between the institutional properties, enterprise system and human actors. To integrate these aspects even further and to better operationalize them, we investigate the role of the larger *institutional structures* that set the agenda for the ES implementation (design and use) as well as the *sensemaking processes* at play when organizational members enact the ES in their local context. We here refer to Jensen et al. (2009), who argue for the usefulness of investigating the *institutional structures* that condition the adaptation as well as the local *sense-making processes* where the technology becomes enacted and shaped by the users to create a new institutional context. In terms of the institutional structures, we zoom in on three concepts that help explain the design process and the appearance of enterprise systems in the market, namely, those of *rationalized myths*, *isomorphism* and *institutional logics*. Likewise, we identify three concepts that reflect the sensemaking processes taking place in the interplay between human actors and the enterprise system in local practices, namely, those of *bracketing*, *enactment* and *identity*. The concepts will be presented next and integrated into a theoretical framework.



## 2.1 Institutional structures: rationalized myths, isomorphism and logics

The concepts of *rationalized myths*, *isomorphism* and *institutional logics* (Scott 2004, 2008) are useful when investigating the institutional properties (Orlikowski 1992) at play in the ES adaptation process in SCANDI. The first concept, *rationalized myth*, represents rational arguments that are used by organizations to “maximize their legitimacy and increase their resources and survival capabilities” (Meyer and Rowan 1977, p. 53). Organizations define and conform to these myths in order to be “proper” organizations (Boxenbaum and Jonsson 2008). Relevant to this study, we wish to point to how certain institutionalized products, services, techniques, regulatory systems, public opinions and professional standards may serve as powerful myths exerting institutional pressures on organizations in multiple and complex ways.

Rationalized myths and taken-for-granted rules lead to *isomorphism* (structural similarity), where the formal structures of organizations need to conform to society to obtain legitimacy (Meyer and Rowan 1977). DiMaggio and Powell (1983) move the focus on isomorphism from the society level to the organizational field level, introducing the concepts of coercive, normative and cognitive institutional pressures. The authors argue that these pressures lead to isomorphism where organizations live in an iron cage. Liang et al. (2007) postulate that cognitive, coercive and normative institutional pressures impact the assimilation of ES.

The emphasis on isomorphism within institutional theory (Greenwood et al. 2008) has recently progressed to address the effects of different, often conflicting, institutional logics on individuals and organizations. We therefore introduce a third concept, *institutional logics*, that “...shape rational, mindful behaviour [...] [I]ndividual and organisational actors have some hand in shaping and changing institutional logics” (Thornton and Ocasio 2008, p. 100). Multiple institutional logics are available for organizations and individuals (Scott 2008), and the embedded agency in institutional logics presupposes partial autonomy for individuals and organizations (Chu and Robey 2008; Thornton and Ocasio 2008). Institutional logics live side by side with institutional pressures, and rational myths as organizations operate in pluralistic institutional contexts, with the internal functioning reflecting the larger systems themselves (Kraatz and Block 2008). This results in an organization that: (1) may have multiple institutionally given identities, (2) may be the structural embodiment of multiple logics, (3) may be legitimated by multiple mythologies and (4) may take for granted very different beliefs and values; in short, multiple aspects to multiple people.

As mentioned, institutional logics do imply embedded agency; however, we lack a detailed understanding of how individuals and groups in organizations choose between the available multiple logics, often contradictory, and then “edit” the roles and scripts (Weber and Glynn 2006) embedded in them. This is where a focus on sensemaking processes may serve as an appropriate approach in our analysis of the SCANDI case. We thus suggest complementing institutional concepts with sensemaking concepts (Jensen et al. 2009; Weick 1995a) to ascertain how the interplay between technology and human actors’ interpretations at the micro-level help create meaning that guides further action and interpretations.





## 2.2 Sensemaking processes: bracketing, enactment and identity

A focus on sensemaking processes (Weick 1995a) is useful when examining social aspects of technology adaptations (Jaspersen et al. 2005). Sensemaking centers on two fundamental questions: “What is going on here?” and “What do I do next?” (Christianson and Sutcliffe 2008). As part of a sensemaking process, people develop certain assumptions and expectations of the technology that shape their subsequent actions with it (Orlikowski and Gash 1994). The sensemaking processes among organizational members is intensified when they face new or unexpected situations, e.g., when new technology is implemented.

The new technology, reflected here as the enterprise system, may impose a certain degree of ambiguity or uncertainty for those who are going to use it, as there is no predetermined way to act (Weick et al 2005). Weick refers to such a situation as a “shock” that triggers an intensified period of sensemaking (Anderson 2006). In order to make sense of this new situation, organization members will normally engage in a process of singling out items and/or events related to the technology in order to connect them. This is also referred to as a *bracketing* process (Weick 1979) in which the users of a given technology identify specific cues that signify desired preferences and ends. The cues relate to a specific set of frames that an individual holds, and it is the connection of these cues to an existing frame that creates meaning. The frame represents certain institutional logics, and thus we see an obvious link to institutional structures.

The bracketing process is on-going where the technology is contextualized, managed and adapted in the specific context of use. The output of this process may be the creation of new structures or the reinforcement of existing ones. In this way, the users of a technology create the reality that they respond to in a process of *enactment* (Weick 1995a). The meaning that the users create will guide their future actions and attention in the situations they face. Enactment thus relates to the human agency aspect as also presented by Orlikowski (1992), where human actors appropriate the technology by assigning shared meaning to the technology and by sustaining the technology through on-going maintenance and modifications.

Closely related to bracketing and enactment, we find the concept of *identity*, which refers to: “Who we think we are as organizational actors (identity) shapes what we enact and how we interpret” (Weick, et al. 2005, p. 416). Introducing an ES in an organization constitutes the stimulus that users try to place in a frame. Through this process, users attempt to relate their interpretations of the system to the expectations they have of their identities, roles and responsibilities. The identity thereby influences human agency by confirming or questioning the existing understanding of “who we are” vis-à-vis the technology.

## 2.3 Integrated theoretical framework

In Table 1, we show how the dual structurational model by Orlikowski can be integrated with the concepts of institutional structures and sensemaking processes. This provides us with a more refined theoretical framework for our analysis of the ES adaptation in SCANDI.



	<i>Institutional structures</i>	<i>Sensemaking practices</i>
<i>Institutional Properties</i>	Institutional logics and pressures (normative, coercive and cognitive) shape an ES adaptation Rationalized myths and taken-for-granted rules impact companies' resources and survival capabilities Companies seek to conform to societal and/or organizational pressures to obtain legitimacy (i.e., isomorphism)	Institutional structures constitute the ES which will further guide action Existing structures are reinforced or transformed through local practices
<i>Enterprise System</i>	ES can be seen as a rational system that adheres to global standards and public trends ES assimilation is influenced by the cognitive, coercive and normative institutional pressures ES becomes a carrier of certain institutional logics	The enactment of an ES in practice is influenced by human actors' assumptions and expectations about the system Cues about the ES are enacted in practice and impact the shaping of the system
<i>Human actors</i>	Meaning among human actors is created by relating cues to existing frames (where frames represent the institutional context) Frames represent certain institutional logics, within which human actors try to create meaning	Human actors enact their practices and environment, which both enables and constraints their further understanding and use of the ES Human actors' identity shapes that they interpret and enact in practice through bracketing processes

Table 1: Integrated theoretical framework

The theoretical concepts presented here serve analytical purposes to investigate what takes place in both the supplier and customer organization, as illustrated in Figure 1. While the three dimensions of the institutional properties, enterprise system, and human actors are separated in the table for analytical convenience, in practice they constitute a mutually interactive collective.

### 3 Research methodology

#### 3.1 Setting

We studied the institutional structures and sensemaking processes that shaped the design, implementation and use of the accounting system (AccSys) to obtain in-depth knowledge about its adaptation process in SCANDI's finance department. SCANDI (a pseudonym) is a Scandinavian



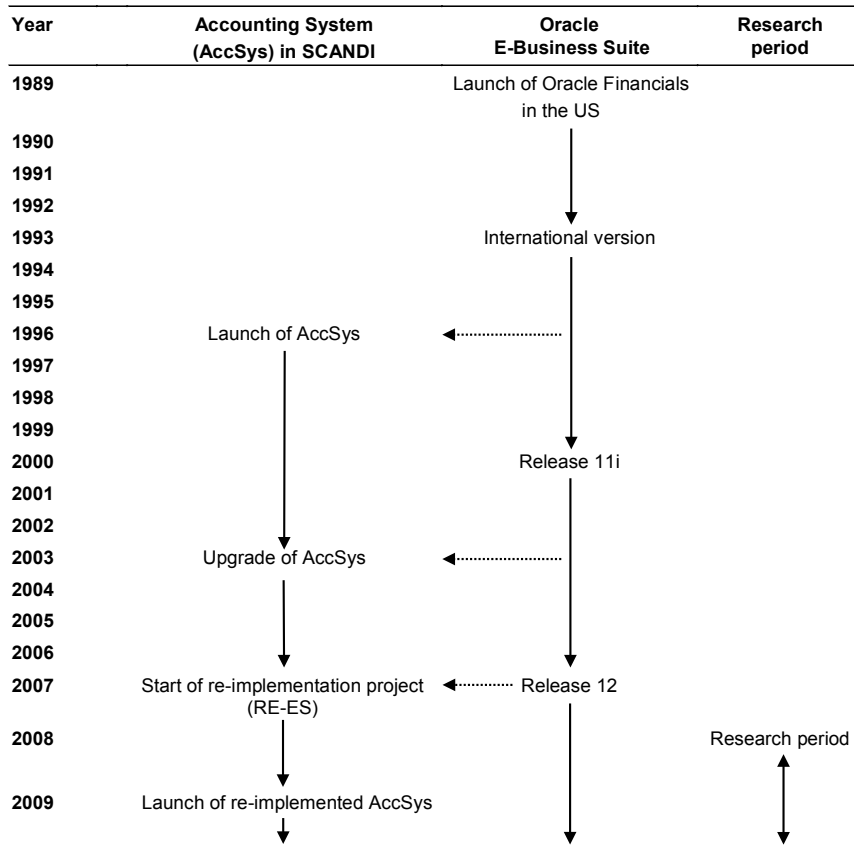


Figure 2: Timeline of implementation and use of Oracle E-business suite

an company with more than 10,000 employees. It belongs to the utility industry segment where it produces and sells high-tech services. SCANDI performs primary activities such as logistics, operations, sales and marketing, and services. It also supports activities related to administration, human resource management, procurement and information systems services. The first company in SCANDI was established in the late 1890s, and the company today is the result of a merger between several companies. We chose to focus on the finance department in SCANDI as our main unit of analysis since the accounting system is perceived to be highly adapted in this department. The accounting system is a complete integrated part of the ES. This appears to be a deviant case (Creswell 2007) compared to the extant literature on ES adaptations (e.g., Soh and Sia 2004). The following section details SCANDI's ES implementation.



### 3.2 Enterprise system implementation

Figure 2 below shows the implementation timeline of Oracle E-business suite (OEBS), starting with the launch of AccSys in 1996, which was followed by several upgrades and finally the large re-implementation project (RE-ES) which took place from 2007 to 2009.

The re-implementation project, RE-ES, can be characterized as being midway between a “complete replacement of a legacy system” and “a technical upgrade” (see also Parr and Shanks 2000). It implies a major re-engineering effort where, e.g., data on suppliers were moved from separate data tables to the Trading Community Architecture data table, highly complicating the data conversion process (see also Swanton 2008). In Figure 2, we see how the new releases of OEBS influenced SCANDI’s local ES implementation.

### 3.3 Research approach and data collection

To answer our research questions, we conducted an in-depth case study of the AccSys re-implementation project in SCANDI from 2008-2009 (see Figure 2). We adopted a contextualized, interpretive research approach (Pettigrew 1990; Walsham 2006) that attempts to understand phenomena through the meanings that people assign to them (Myers and Avison 2002). We acknowledge that access to reality is through social constructs such as language, consciousness and shared meanings (Berger and Luckmann 1966), and such access to reality is indeed relevant when the aim is to study the interplay among institutional properties and local sensemaking practices in an adaptation process. The study is designed as longitudinal and is based on a combination of different data collection techniques, as presented in Table 2.

The first author collected data in four parts of SCANDI, including the project group that managed the re-implementation project, the finance department and the supply chain division that involves two user groups (the purchasing department for “supply chain procurement” and a large cross-functional user group for “supply chain requester”). We made use of the data sources presented in Table 2 to obtain an overall understanding of the customer organization, SCANDI. Further, we studied Oracle as a supplier organization mainly through publicly available documents and a few interviews with current and former employees. The richest source of empirical data stems from interviews with five employees in SCANDI’s finance department, and was performed over two periods (from February 2008 to May 2008 and again from January 2009 to June 2009). The 16 interviews varied in length from 15 to 70 minutes where the accountants and other finance personnel talked about their experiences with the AccSys implementation. The type of engagements with the interviewees ranged from in-depth semi-structured interviews to short unstructured phone interviews. The interview guide for the semi-structured interviews focused on initiating and stimulating the discussion about institutional structures and sense-making processes (see Appendix A). All in-depth interviews were taped and transcribed verbatim, while the short unstructured phone interviews were transcribed from handwritten notes. Some events in SCANDI took place before January 2008 and are thus historical reconstructions from documents and recollections from interviews.



<i>Data Collection Methods</i>	<i>SCANDI Project Group</i>	<i>SCANDI Finance</i>	<i>SCANDI Supply Chain Procurement</i>	<i>SCANDI Supply Chain Requester</i>	<i>Oracle</i>
Semi-structured interviews	5 interviews	7 interviews	10 interviews	5 interviews	3 interviews
Short unstructured phone interviews	3 interviews	8 interviews	9 interviews	9 interviews	
Focus group interviews		1 interview			
Participant observation	18 meetings		1 meeting	2 meetings	
Document analysis	Unpublished documents: plans, reports, minutes and presentations; press releases from SCANDI; Oracle information ( <a href="http://www.oracle.com">www.oracle.com</a> ); news articles; magazine reports				

Table 2: Overview of data collection methods

### 3.4 Data analysis

The data analysis followed the interpretive tradition (Walsham 2006) using hermeneutics (Gadamer 1976; Myers 2009), where concepts from institutional theory and sensemaking theory were used as sensitizing devices (Patton 2002, pp. 452-462) to support the coding and analysis process (Myers 2009, pp. 110-111). The approach may best be described as being *between* grounded theory and direct application of theory to data (see also Noir and Walsham 2007). We constructed 30 codes (see Appendix B) based on several readings of the interview transcripts and a few other documents pertaining to answering our research questions. The coding process



was iterative, gradually adding more and more codes by consulting archival data and by re-reading the interview transcripts. NVivo (Bazeley 2007) supported the initial data management and coding process, while theorizing (Weick 1995b) was conducted separately. A number of themes emerged from this process, such as “finance employees belong to a small and harmonious group.” In order to validate our results and to provide further explanations and comments, the finance employees, who had been interviewed individually at an earlier stage, participated in a focus group interview (October 2009) to discuss the themes from the coding process. We then used the dual structural model of ES (as shown in Figure 1) to categorize the themes into either “supplier organization” or “customer organization” and then further into “institutional properties,” “ES” or “human actors” where, e.g., “finance employees” was categorized as “human actors” in the “customer organization.” The themes were then analyzed by using the concepts from institutional and sensemaking theory. Finally, Oracle verified the factual description of the company and their products.

## 4 Analysis of the case: the re-implementation of an accounting system

In order to provide a detailed understanding of how the accounting system was adopted in SCANDI's finance department, we present the storyline below where we analyze the changes that happened with respect to the *institutional properties* for SCANDI and Oracle, the *accounting system* and the *accountants* (as illustrated in Figure 1).

### 4.1 The creation of a rationalized myth about effective work practices and an efficient enterprise system

SCANDI's institutional context had for several years been marked by its monopoly situation. SCANDI and its predecessors had operated as territorial companies in a highly regulated context where customers were mandated to buy utility services from them. This meant a low level of competition for SCANDI which marked its internal structure and culture (Pettigrew 1987). A consultant described SCANDI as: “...a supertanker that does not have all the needed engines to react promptly enough.” However, this situation changed in the nineties when the Scandinavian countries decided to deregulate and liberalize the utility market. This change in the institutional context reflected a new era with market-orientation where SCANDI faced an institutional pressure to become more competitive. However, only a few strong competitors existed and the company still benefitted from its many years of monopoly by having a big market share and owning a considerable part of the utility infrastructure.

To keep up with the competition and to have an up-to-date and integrated system in the merged SCANDI, the management decided in 1996 to implement Oracle E-business Suite (OEBS) (see Figure 2), although at that point in time mainly as an accounting system. This decision was highly influenced by the major international trend to have enterprise systems to





optimize and improve business operations. Furthermore, enterprise systems were perceived as being valuable in a context of globalization and in a situation where the number of mergers and acquisitions increased (Davenport 1998). We thus witnessed the creation of a rationalized myth with respect to the enterprise system that was expressed in the public debate and stimulated by consultants and professional associations (see also Swanson and Ramiller 1997). In SCANDI's finance department, AccSys represented an artifact worth implementing, based on its potential to make the accounting practices more effective and streamlined. Czarniawska and Joerges (1996) designate this as the "travels of ideas," meaning that the idea of "an efficient accounting system" travels from place to place, or, as in this example, from the discourse on the international and national level into this specific organization, and further to the finance department and its employees.

The supplier organization, Oracle, had been successful in attracting many customers worldwide with OEBS, which meant that the system exerted strong institutional pressures on organizations such as SCANDI (see also Vitharana and Dharwadkar 2007, pp. 348-349). Oracle was ranked as the number two global ES supplier after SAP (D'Aquila et al. 2009), implying an image of a very strong player. Oracle was also one of the important institutional entrepreneurs (Scott 2008) that diffused and institutionalized the rationalized myth about "the un-customized efficient ES", materialized by their marketing communication and the ostensible global, integrated and flexible OEBS software with no need to customize (see also Wagner, Scott, and Galliers 2006).

AccSys was the first system to be launched in SCANDI with around 40 core users. AccSys was upgraded in 2003 to OEBS Release 11i (see Figure 2). Even though the institutional context had changed, it took many years for SCANDI to adapt and accept the best practices inscribed in the accounting system. A "fit for me culture" prevailed as a strong institutional force more than ten years after liberalization. A consultant stated: "... maybe it is related to the culture in this company [...] some of the employees say, "I would like this field here and this report there" [...] The reason for this may be that it [OEBS] is...not very SCANDI minded." More than 400 customizations were made throughout the years of the implementation, which led to difficulties in upgrading the system and which locked SCANDI into an old ES architecture. This was an untenable situation that had to be changed, and in 2007 a re-implementation project (RE-ES project) started with the purpose of reducing customizations from 400 to 150 (SCANDI OEBS pre-analysis, April 10, 2007), thus reducing IT costs by approximately 40% (RE-ES Project description, October 3, 2007).

## 4.2 Competing logics of AccSys: "match to current business processes" versus "match to standard package"

The early international versions of OEBS fitted poorly to Scandinavian customers, as the system was originally designed for the US market and accordingly reflected the US institutional context. For SCANDI, it therefore seemed necessary and reasonable to heavily customize AccSys in order to fit the system to its local institutional properties. This meant that interfaces to the many decentralized accounting systems were established, that the financial practices were becoming institutionalized, and that compliance with Scandinavian legislation for accounting standards





was ensured. The semi-finished accounting system was adapted to the customer organization where the institutional logic “match to current business processes” prevailed.

The management of SCANDI accepted that each department had its specific requirements and needs fulfilled: “It is this spirit [every department has its own requirements] that you experience out there and it will continue unless we change the culture and get people to understand the possibilities in the system” (consultant). Consequently, many interfaces to AccSys existed as many departments (including subsidiaries) had their own decentralized accounting systems. This “fit for me culture” was furthermore mirrored in the IT department where IT developers were brought up to serve their internal customers with local custom-made or heavily tailored applications. This obviously caused a complex technical infrastructure with more than 40 interfaces to AccSys and different work practices with AccSys as the central system: “AccSys is the hub of the universe and we import data from many sources” (AccSys super-user).

Customizations are problematic for most organizations when they wish to upgrade the standard package to a newer version because it increases both the cost and the duration of the upgrading process (Beatty and Williams 2006). This is a challenge for suppliers of standard packages, and Oracle therefore sought to overcome the challenge by: (1) convincing its customers to “standardize business processes the Oracle way,” i.e., make them adhere to the institutional logic “match to standard package” and (2) building highly flexible multi-everything standard packages to decrease the need for customizations. Release 11i in 2000 was a landmark for Oracle as a highly integrated and web architected suite (Oracle 2007). The marketing vice president of Oracle argued: “Oracle isn’t telling enterprises to stop customizing entirely. Rather, they should simply standardize on Oracle for common tasks” (Wagner 2001, p. 12). In the public debate, arguments in favor of implementing ES were also to “avoid customization” and to “redesign business processes to support the software” (Sumner 1999, p. 302).

SCANDI was influenced by two competing institutional logics in the form of “match to current business processes” versus “match to standard package” (see also Berente 2009; Currie 2009). The former logic was predominant until January 2007 when the RE-ES project was launched and when the deinstitutionalization process started. Release 12 represented a multi-everything enterprise system (Kholeif et al. 2008) with more than 100 integrated modules targeting most industries as well as public and private organizations. The underlying philosophy of Release 12 was articulated as a global, highly integrated, and flexible standard solution (Oracle 2008a). There was no need to customize Release 12 due to its flexibility, which included country-specific capabilities. An area such as accounting and finance was moving towards a global standardization because of international accounting standards that promulgated, e.g., “International Financial Reporting Standards” (Tsakumis et al. 2009) addressed in Oracle’s release R12 (Oracle 2008b).

The message from Oracle was mirrored in the purpose of the RE-ES project in SCANDI, and could be conceptualized as “un-customize customizations” (Beatty and Williams 2006). A super-user described the situation as follows:

AccSys has become more and more like the Oracle standard, and we cannot get a Rolls-Royce any longer [...] there has been a culture change as more people accept default options. Administrative systems like [OEBS] have evolved much over the years and hence there is no great need for customizations, since the standard system fulfills the require-





ments [...] there is perhaps also a mutual adaptation between the system [AccSys] and the organization where you get used to the system.

Also a former Oracle employee explained the chain of events in SCANDI:

The vast majority who have bought a standard system for the first time adapt the system to the company, which means you have a totally twisted system, but then the company starts one or more re-implementations, where the company increasingly adapts to the standard system.

The dramatic decrease of customizations was not presented as a problem by any of the interviewees from SCANDI. A possible explanation could be that the accountants accepted the institutional logic of “match to standard package,” as reflected in the comment, “We cannot get a Rolls-Royce any longer” (AccSys super-user). The question is then, why did the accountants accept matching their work practices to the standard package represented by AccSys? A possible reason may be that the logic of “matching to standard package” was well-aligned with how the accountants perceived themselves (i.e., their professional identity) to be good and loyal employees. The way they conducted their work tasks was highly standardized and structured and this was well in line with the procedures already integrated in AccSys. The cues that they bracketed about AccSys (i.e., to support accounting practices and deliver high quality work) appeared to reinforce the overall frame (i.e., the standards for accounting procedures).

Another explanation might be the globalization of accounting standards which is an aligning factor between the standard package and the accounting practices at SCANDI, and thus the two elements converge on each other (i.e., isomorphic pressure from standards on both SCANDI and Oracle). Lastly, it could be argued that SCANDI is still influenced by the two competing institutional logics “match to current business processes” and “match to standard package,” as there are about 150 customizations in the re-implemented system.

### 4.3 Accountants enacting AccSys in practice and reinforcing existing structures

The finance department was a well-established unit with the central function of collecting data from other decentralized finance functions, such as approval of supplier invoices before payment. In 2006, the number of financial transactions amounted to 54 million. Most of the accountants had worked for 10, 20 or more years in SCANDI when AccSys was implemented and thus they were very familiar with the tasks they had to perform: “[We have] a nice, well-defined job [where] we know exactly what to do and what deadlines to keep” (accountant 2). The many years of experience at SCANDI meant that the employees had been part of the institutionalization of AccSys and associated business processes over the last 13 years. They had “grown up” with AccSys as a kind of secondary socialization (Berger and Luckmann 1966), and this long-term institutionalization and legitimization process may be the key reason for their acceptance of the system today. The long-term process meant that the employees did not really experience the RE-ES project as a new, abrupt, and unexpected situation, i.e. what Weick (1995) calls a





“shock”, where there was no predetermined way to act. Consequently, no high degree of uncertainty or ambiguity was encountered by the accountants.

The accountants were active in forming/enacting the course and the outcome of the RE-ES project. They were the primary users of AccSys, interpreting, creating, as well as determining the use of the system in practice. The employees did not have much to say with regard to the functionality of the system, and their perceptions and actions in practice seemed to be well-aligned with the idea behind the system, i.e., to slowly but surely optimize and standardize work procedures. As one of the accountants stated:

Often you hear about situations where it takes considerable time before something like this works. But today the system is a part of me. That's how it is. And right now when we talk about this, it reminds me that the system is in English [change from local language to English was part of the RE-ES project]. I don't know why I came to think about this, but this is just how it is.

The procedures in the system seemed to be highly related to the pre-established conventions of use and ways of thinking.

We can find other evidence of how the accounting system seemed well-integrated into the culture of the finance department. The accountants described themselves as a harmonious group that knew which tasks to perform, how to perform them and what deadlines to meet. Work procedures were highly predefined and divided among the employees: “...I'm in charge of paying the bills and I'm not allowed to set up one. It is rather rigid” (accountant 3) and they were easily integrated into AccSys.

The job seemed to fit well with the personal working style of the accountants. The accounting practices were marked by regulative institutional forces (Scott 2008) such as accounting legislation and auditors' requirements, and we interpreted the degree of freedom among the employees to be more restricted than that of many other occupations due to these institutional structures. It is, however, reasonable to assume that the employees found these structures appropriate—whether it was auditor approval procedures or operating constraints by AccSys—because they matched with their personality and identity. For instance, the employees had long before the AccSys implementation introduced control mechanisms: “We play a police role with regard to terms of payment...one of our colleagues controls the work that is accomplished the day before and another person controls her work... it is like a peer review” (accountant 1). In this way, the procedures in AccSys seemed to “make sense” to the employees, as they complied with their preferred working style and self-perception, and their enacted practices thus reinforced existing structures. In other words, what the employees bracketed as specific cues, i.e., standard procedures and regulative practices in AccSys, seemed to be well-aligned with the overall frame of accounting practices and the overall institutional structures that were present and had existed for a number of years in SCANDI. The situation can thus be interpreted as follows: we have typified actors (i.e., accountants) performing typified actions (i.e., accounting in the system) that are well-aligned with a typified technology (i.e., AccSys).

There were approximately 40 core users of AccSys, which is quite a small user group compared to, for example, SCANDI's supply chain system (SCS) with more than 3,000 users. It is obviously easier to implement an enterprise system for a small user group compared to a large one and then to support a few people after go-live. This may also be a contributory factor to the







highly integrated system; a super-user supported this argument by the following statement just after the launch of Release 12: “Finance users can use the system now after a week’s time, but this is because there are few users who need to learn it, and the support function is close to us.” The finance user group was not only a small, but also a homogenous, group, as emphasized by the interviewees.

AccSys is an important system seen from a rational perspective, i.e., a modern company cannot survive without a well-functioning accounting system. But this shared understanding of a very important system also had a symbolic meaning (Meyer and Rowan 1977), which reinforced the institutional structures between the finance department and AccSys, and which supported the symbiosis of finance employees and the accounting system. The users did not put forward misalignment or misfit problems with AccSys. Rather, they argued how easy AccSys was to use, stating that: “...we’re living in a Release 12 world now” (accountant 2). The problems that the users mentioned were considered to be small “hiccups” that could disappear as time goes by.

#### 4.4 Summary of the findings

We have used the dual structurational model and concepts related to institutional structures and sensemaking processes as sensitizing devices for the emerging themes presented in the analysis. Table 3 summarizes the dynamics that existed between the institutional context, AccSys, and the accountants in SCANDI’s finance department. Well aware that these aspects reciprocally influence each other, we have chosen to separate them in the table for analytical purposes.

### 5 Contributions in terms of lessons learned

The findings in Table 3 address our two sub-questions: “What role do institutional structures play in setting the agenda for the ES implementation and use?” and “What are the sensemaking processes at play among organizational members to enact the ES in the local context?” Based on these findings, we can infer a number of explanations to our overall research question: “What can we learn from this particular case study to inform future ES implementations?” Below, we discuss and reflect upon the key insights from this case study by framing our contributions into five lessons learned. This is done by abstracting the findings from our empirical case study to discuss practical implications. At the same time, we compare our findings to the existing knowledge base on enterprise system implementations to discuss the theoretical implications of our study.





	<i>Oracle Corporation (Supplier organization)</i>	<i>SCANDI (Customer organization)</i>
<i>Institutional properties surrounding SCANDI</i>	<p>Oracle had become an important global ES supplier with a high number of OEBS customers world-wide</p> <p>ES had become an international trend and thus exerted strong institutional pressures on customer organizations such as SCANDI</p> <p>Oracle adapted and reinforced the rationalized myth about “the efficient un-customized ES” and used marketing communication to diffuse the message and persuade customers</p>	<p>SCANDI experienced a shift from monopoly to competition, which meant an institutional pressure to become more competitive (i.e. more effective and have streamlined work practices)</p> <p>The idea about OEBS as an efficient system “travelled” from international and national level into SCANDI</p> <p>SCANDI eventually accepted the rationalized myth about “an un-customized ES” because of the changed context</p>
<i>AccSys</i>	<p>Oracle tried to institutionalize OEBS from being a US specific system to becoming a “multi-everything” global, highly integrated and flexible system with no need for customizations</p> <p>OEBS was adhering to global standards (e.g., accounting standards)</p>	<p>At first a highly customized version adhering to the institutional logic “match to current business processes”</p> <p>Then after the RE-ES project a much less customized version coming closer to the institutional logic of “match to standard package”</p> <p>The cues that the accountants bracketed about AccSys reinforced the overall frame of standardized accounting practices</p>
<i>Accountants</i>	[Not investigated in this study]	<p>Employees in the finance department belong to a small, harmonious group and have high seniority in SCANDI</p> <p>Long-term institutionalization and legitimization process from 1996 to 2009; employees experienced limited degree of ambiguity or uncertainty</p> <p>Work procedures in AccSys fitted well with the working style and the professional identity of the accountants (i.e., typified actors with typified actions)</p> <p>The enacted practices reinforced existing structures</p> <p>AccSys was perceived as the “hub of universe”, i.e., a very important system from a rational perspective</p>

Table 3: Summary of findings





## 5.1 Lesson 1: An ES implementation entails mutual adaptations between the organization, human actors and enterprise system

Public discourse and existing studies in the IS field provide several accounts of failure prone ES adaptations mainly because of misalignment between the system, users, and organization. It may thus appear as a surprise that enterprise systems indeed expand and have become institutionalized artifacts in many companies worldwide (Pollock and Williams 2009, p. 7). The enormous growth in enterprise system packaged software (D'Aquila, et al. 2009; Jacobson et al. 2007) indicates that these systems *do* expand, suggesting that a number of organizations actually do experience some degree of success with ES despite all the related challenges. It is thus relevant to probe into the mechanisms at play in the ES adaptation process at SCANDI that contributed to its success. If we look at the case study, SCANDI has been working with AccSys since 1996. This process has been far from smooth; rather, it can be characterized by negotiations about the software, each upgrade and re-implementation being very challenging and culminating in performance drops, as is also evident in other case studies (Lyytinen and Newman 2008; Markus et al. 2000; Markus and Tanis 2000; Ross et al. 2003).

An important lesson gained from this case study is that each upgrade/re-implementation had its own “troublesome war stories” to tell. These issues were problematic and challenging for the organization, but they were episodic, and, in the longer run, the system became more and more institutionalized at SCANDI. If we compare this to existing literature, we see that Wagner and colleagues (2004) report on a similar experience from an ERP implementation in an Ivy League University in the US that had a strategic partnership with an ERP supplier when designing a “higher education industry standard,” i.e., an ERP system to universities across geographical and cultural contexts. The university experienced serious post-implementation problems, the ERP system being well-aligned with the central administration but misaligned with local faculties and their administration. This misalignment happened despite the advantageous situation for the university to be involved in designing the industry standard (Wagner and Newell 2004). A later follow-up study shows that the ERP system survived and that “ERP buy-in” was achieved in 2003—seven years after the project started in 1996 (Wagner et al. 2010, p. 282). The researchers conclude: “Much IS literature to date has focused on the problems associated with configuration and implementation or the immediate (often negative) reaction to, and use of, packaged software. Yet there is significant evidence that projects often do survive and yield a working system in the face of, and despite, a negative release” (Wagner et al. 2010, p. 276).

Although our study is conducted in a fairly different setting, it shows similar patterns, and an obvious interpretation is that these implementations are more resilient than often presented in the public and academic discourse. It also indicates that enterprise systems, embracing ERP and accounting systems, seem to become “part of the furniture” after a long adaptation process which spans several years and which involves mutual adaptations between the organization, human actors and technology through upgrades, re-implementations and changes in procedures, assumptions, knowledge and relationships (inspired by Tyre and Orlikowski 1994, p. 99).

The first lesson we would like to draw to the reader’s attention is that an ES implementation entails mutual adaptation between the organization, human actors and enterprise system. Time





plays an important role in the institutionalization of an enterprise system, as habits and routines are enacted over a long period. This knowledge entails important implications for practice, since managers will now be aware that, despite a number of challenges, projects are most likely to survive and yield a working system over time. In terms of theoretical implications, we can add this insight to the existing knowledge base and investigate this further in other more complex settings.

## 5.2 Lesson 2: “Small is beautiful” is almost a truism but may turn out to be an appropriate starting point

The expression that “small is beautiful” is almost a truism, but this might be an appropriate starting point for the second lesson learned. The finance department at SCANDI consists of a small homogeneous group which seems to have fostered the adaptation process in a profitable way. However, if we deconstruct the SCANDI case, more angles can (and must) be added to this interpretation. AccSys is used by 40 core users in the finance department, but is also used by thousands of other users who are *decoupled* from the core AccSys functionality, either by decentralized accounting systems serving a specific organization (e.g., subsidiaries or independent lines of business) or tailor-made front-end applications (e.g., a bolt-on for approving invoices called Approve). This means that the design of AccSys and its integration to other systems enable a decoupling between different user categories, thereby facilitating a neat alignment of AccSys with the small user group in the finance department. This adaptation process could have turned out very differently if SCANDI had insisted that the several thousands of other users were forced and obliged to use AccSys directly.

The Ivy university case is also about finance management, but the university decided to let all users work directly in the ERP system, which was perceived as a big disadvantage for the local faculties. Several workarounds were brought into use, such as a bolt-on to the accounting system taking care of so-called “commitment accounting” and use of Excel spreadsheets for reporting (Wagner and Newell 2004, pp. 317-318).

AccSys and Approve are part of the overall information infrastructure at SCANDI, and Hanseth and Lyytinen (2010) propose a number of design rules for information infrastructures, including “target IT capability to a small group” (rule 1) and “promote partly overlapping IT capabilities instead of all-inclusive ones” (rule 2). Rule 1 is prevalent if we consider AccSys as an application targeted to a small core user group that appears to be highly useful for these users. Rule 2 is also followed, as AccSys and Approve can both approve invoices; however, while AccSys has rich and complex financial functionalities, Approve is primarily dedicated to approving invoices although it also has other IT capabilities (e.g., showing images of invoices), which is not possible in AccSys. In this respect, AccSys and Approve have overlapping functionalities but target two different user groups, thus making the IT capabilities as simple as possible for each user group (Hanseth and Lyytinen 2010). These design rules are framed within existing work on how to build effective infrastructures that rely on “the installed base” (Hanseth 2010) and “bootstrapping” (Hanseth and Aanestad 2003; Aanestad and Jensen 2011).

The key argument here is that the introduction of new technologies must be phased. This means that a system should start by supporting less complex and critical work routines. It also





indicates that the system should be promoted first amongst the most motivated users to provide immediate benefits and then build on from there (Hanseth and Aanestad 2003). So the truism “small is beautiful” appears to be true in certain contexts, and one way to achieve this and establish an organization-wide ES implementation is to design decoupled systems and accept small, tailor-made applications, bolts-on and other initiatives to ensure that the IT capabilities are as simple as possible for specific user groups. These design principles, as presented in the literature, have been confirmed in the SCANDI case and imply important implications for managers who wish to establish complex information infrastructures based on new IS such as enterprise systems. An important learning is to proceed in small steps to ensure an appropriate starting point.

### 5.3 Lesson 3: A certain level of resilience is essential to cope with future upgrades and enhancements

Let us consider SCANDI as a complex social system consisting of patterns of joint human action. AccSys is part of this complex social system that is not deterministic since human actors might be governed by rules, but these rules change (Stacey 2003, pp. 265-290). Complex social systems can be characterized as self-referential and self-organizing systems, which means “that agents [humans] in a complex system interact locally with each other on the basis of their historically evolved identities” (Stacey 2003, p. 265). The history of OEBS in SCANDI implies a technological trajectory with the first implementation of AccSys in 1996, several upgrades, small enhancements, and then a major implementation of the supply chain system (labeled major ES events). We cannot predict the outcome of these major events, but according to complexity theory, the possible outcomes will demonstrate a “family-like similarity” and thus it is not possible for just anything to happen (Marion 1999).

In 1996 when SCANDI started to use AccSys several outcomes were possible; such as the system working seamlessly, the system needing repairs or at the other extreme end of the spectrum, closing down of the system, which indeed happened recently for Marin County’s \$30 million investment in SAP software (Krigsman 2010). However, AccSys stabilized and survived the first years—just as did the Ivy University example above (Wagner et al. 2010)—and SCANDI continued to upgrade, enhance and re-implement the system over the next decade. At each major ES event it was not possible to predict the outcome (each event could in principal range from minor issues to the extreme of closing down the system). Nevertheless, the system survived even in the longer term and became more and more institutionalized (Silva and Backhouse 2003).

The design decision in the nineties to adopt and implement OEBS gradually led to a greater and greater technological ‘lock-in’ along the institutionalization process, as SCANDI had to stay with OEBS because the cost of change would be too high (Stacey 2003, p. 273). This could create constraints for growth (see also technology traps in Hanseth and Lyytinen 2010, p. 7), as the future development of OEBS was managed by Oracle. SCANDI was forced to follow this trajectory to some extent, which might not have been aligned with its preferred strategy. However, the stabilizing effect does also fertilize resilience to cope with these major ES events. The RE-ES project implied complex changes in SCANDI’s multi-sourcing arrangements which could have been very problematic for SCANDI (see also Svejvig and Pries-Heje 2011), but these were tackled due to the resilience built up in the organization.





Thus, the lesson learned is that the long-term trajectory of working with, and institutionalizing, an enterprise system can fertilize a higher degree of resilience to cope with future upgrades and re-implementations. Weick et al. (2008) argue that mindful organizations create commitment to resilience by favoring improvisation and adaptation over planning and routine. This entails the ability to cope with problems as they occur and to contain, not eliminate, surprises. A way to commit to resilience is to build a capacity to cope with, and to absorb, change and then to utilize the change in order to move forward. The accumulated resilience may be important for future innovations related to the OEBS framework. Again, we see important practical implications, as we know that a certain degree of resilience is indeed useful in terms of ES adaptations. This is supported by the existing literature in other research domains, and we can now use this knowledge to inform our understanding of ES adaptations.

## 5.4 Lesson 4: The recognition of professional identity and roles is vital for ES adaptation

The findings from our case indicate that a match between the logics of the system and the logics of those people who are going to use the system is important (Tyre and Orlikowski 1994). This is not new and has been emphasized in much of the existing literature (e.g. Berente 2009; Goodhue and Thompson 1995; Gosain 2004; Sia and Soh 2007). What is important is how we can foresee a good match between the user and the system and how to cultivate this good match.

Users are not just users in general terms; rather, they are finance users or logistics users, all core users of a system, spending most of their working time using a system or occasionally having infrequent use of a system. In our case, the finance personnel at SCANDI can be categorized as “core users” of the accounting system. Use of the system is either voluntary or mandatory, but mandatory for SCANDI’s finance users since they “must use the system to perform their job functions, there are no alternatives to actual use” (Wang and Butler 2006, p. 449). Furthermore, some user categories, such as finance users in private organizations, might be more receptive compared to, for example, sales people (Ahearne et al. 2007; Speier and Venkatesh 2002), nurses and doctors in hospitals (Currie and Guah 2007; Jensen and Aanestad 2007) and faculty support staff in universities (Wagner and Newell 2004) due to different institutional contexts (see also Scott and Meyer 1991), identities, roles, and typifications of users (Berger and Luckmann 1966; Weber and Glynn 2006).

In terms of practical implications, we thus suggest managers or change agents should carefully analyze the institutional context for a given organization and the characteristics of its users in order to consider the match (or lack of match) between users and system. This “fit-analysis” complements the ordinary analysis and design activities related to ES implementations, where requirements are elicited, gap analysis between ES best practices and current practices is made and tailoring (configurations and/or customizations) is considered to prepare for a suitable ES implementation.

Speier and Venkatesh (2002) present two different firms where a Sales Force Automation (SFA) system was rejected after implementation (shortly after launch in both organizations). A given technology (such as SFA) might influence professional and organizational roles either as competence-enhancing or competence-destroying (Burkhardt and Brass 1990). Sales people ex-





perience greater autonomy than do peers in other organizational roles. They might perceive SFA as competence-destroying and as deskilling their work as it automates sales routines with tighter control (Speier and Venkatesh 2002) and may lead to loss of power and autonomy. The opposite might be true for finance people where AccSys automates many commonplace and tedious routines, freeing time for more interesting tasks. The finance users expressed that they were efficient and delivered high quality work, well-aligned with the intentions of AccSys, suggesting there was a good task-technology fit (Goodhue and Thompson 1995) and AccSys was perceived as competence-enhancing. However, these differences between SCANDI and the two other firms might be more related to the basic identity and roles of sales persons versus finance people than to the actual task-technology fit. Returning then to the fit-analysis between users and system, an important component appears to be the professional identity and roles of the users, and taking their specific social norms, habits and beliefs into account when planning the implementation and use of ES. The importance of the identity of users in enterprise systems implementation has only recently gained terrain in IS studies and we can highly support this area of research, as it would add to our understanding and conceptualization of what ES success entails.

## 5.5 Lesson 5: First customizing and then un-customizing the ES may be a valuable approach towards integrating the system

The conventional wisdom for implementing ES is to minimize or even avoid customizations, also known as “sticking to vanilla” in consultancy language. The arguments put forward are many, such as “problems with upgrade,” “increased costs” and “hamper growth strategy” (Betty and Williams 2006; Hildebrand 2009; Wenrich and Ahmad 2009). The rationalized myth about “the un-customized ES as the most efficient system” has been built up over a long period of time and is the conventional approach found in the literature for implementing enterprise systems nowadays (see also Wagner et al. 2006).

SCANDI’s initial approach was to “match to current business processes” that resulted in many customizations. This was later perceived to be highly problematic, and one of the main drivers for the RE-ES project was thus to un-customize customizations, and SCANDI reversed its approach to “match to standard package.” In hindsight, we could argue that SCANDI should have avoided the many customizations in the first place and followed the conventional approach for implementing ES. The question is, however, whether AccSys would have been as highly integrated as it is today had they followed this approach. It may be that the “first customize then un-customize” is a better approach in some ES implementations. This means that we accept that people are used to some current business processes that are part of the institutionalized practice, and that it takes time (sometimes several years) to deinstitutionalize these processes and institutionalize new ones. In this process, the organization develops together with the enterprise system in a reciprocal manner. We cannot argue for any specific degree of “over-customizations” but emphasize that the conventional approach for implementing ES could at least be questioned, and we thus challenge practitioners and academia to reconsider this rationalized myth.





Before applying the advice to other settings, two moderating issues should be taken into consideration. First, one of the original reasons for heavily customizing AccSys was the bad fit between the US developed package and the local Scandinavian context. Furthermore, ES packages have developed over time to these multi-everything packages (Kholeif et al. 2008), where the need for customizations are expected to be minimal, at least theoretically. Second, SCANDI's shift in institutional properties is particular with respect to moving from monopoly to competition, which has drastically changed the business conditions and company culture so that the "fits for me culture" is no longer accepted in SCANDI, fertilizing the ground for removing customizations. Both moderating issues are specific to SCANDI, but at a more general level they emphasize that the institutional context (country, industry and organization) (see also Sia and Soh 2007) has to be understood before laying down the tailoring strategy (i.e., configurations and/or customizations). These insights have theoretical implications in the sense that we should be careful to rely on generic models to determine ES success, as the approach towards integrating an enterprise system highly depends on the specific context in which it is supposed to work.

## 6 Further research and concluding remarks

The purpose of this study was to investigate what we could learn from the case study of the re-implementation of AccSys in SCANDI to inform future ES implementations. To address this topic, we extended Orlikowski's structurational model of technology by introducing concepts from institutional theory and sensemaking theory to refine our understanding of the reciprocal interaction between the technology, people and institutional properties. This framework was useful to first analyze and then conceptualize about the mechanisms at play in the adaptation process in SCANDI to abstract a number of lessons learned.

We argue that the framework constitutes important insights for future studies in other areas that relate to ES adaptations. The dual structurational model directs our attention to vital components of any ES adaptation process, namely, institutional properties, enterprise system and human actors, both in the supplier and customer organization. The three concepts from institutional theory provide further explanations of the outcomes of institutional pressures and logics on the ES adaptation process. The concepts from sensemaking theory direct our attention to how the system is enacted in practice and relate to the overall institutional frame over time. In line with the arguments put forward by Jensen et al. (2009), we encourage researchers to build on this framework when investigating ES adaptations in other contexts.

Another important insight for future research relies on managerial attention in ES adaptations. Our study emphasizes that managers ought to take the institutional structures and local sensemaking processes into account, as they provide the context for, and specific use of, the enterprise system, and furthermore they take into account the complicated interaction between customer and supplier organization embedded in different institutional contexts that both enable and constrain the adaptation process. An ES adaptation cannot be planned by focusing *only* on the project processes but also by adapting and aligning with the broader context in which the project evolves. By highlighting possible explanations of how AccSys became highly aligned to the work processes in the finance department, managers in other companies may learn from this







experience. The lessons learned in this study may benefit managers in other companies who are about to implement or upgrade their enterprise system. This, however, requires more research focus, preferably from a managerial point of view.

The SCANDI study also highlights the importance of looking at longer term consequences of ES implementations (this study covers 1996-2009). Several authors describe the phases after the first ES implementation, often with quite negative results (Wagner et al. 2010, p. 276), such as “onward and upward” (Markus and Tanis 2000) and “continuous improvement / transformation” (Ross et al. 2003). Few studies appear to investigate the longer term consequences of ES implementations; exceptions, of course, are this current study and the Ivy University study (Wagner and Newell 2004; Wagner et al. 2010).

We have conducted a single case study from an idiographic perspective and we should thus be cautious about generalizations. The accounting system adaptation process that we have studied in SCANDI may be perceived as a relatively ‘easy’ implementation in a small and rather homogeneous group of motivated and IT-skilled employees. The fact that the employees are part of the finance department may imply that they are more receptive to an accounting system (i.e., due to its high standardization resulting from high homogeneity in work methods and in values/mentality) compared to other business functions of a firm. As we mentioned in the section on lessons learned, it is important that managers have their own context in mind, since the outcome may differ across contexts. Aspects which have proved to be main lessons learned in this study may have less importance in another context. Other insights could appear if a similar topic were to be investigated in another company; we thus encourage other researchers to study the processes relative to ES adaptation. We therefore invite researchers to investigate the lessons learned here and replicate them in other contexts of adaptations. Special focus could be spent on the lessons on customization/un-customization, the issue on building up resilience over time, and the importance of taking into consideration the professional identity and roles of the users.

## Appendix A: Excerpt of interview guide

1. Personal data
  - a. Name, sex and estimated age
  - b. Work experience (number of years)
  - c. Employment at SCANDI (number of years)
  - d. Worked with Oracle E-Business Suite (OEBS) (number of years)
  - e. Other background information (education, work experience, etc.)
2. Work tasks at SCANDI
  - a. Which tasks do you carry out?
  - b. Which tasks do you carry out in OEBS?
  - c. Discuss specific work tasks
  - d. Organizational performance
  - e. How effectively does OEBS function in your daily work?
  - f. How much of your working time directly involves the use of OEBS?





- g. How satisfied are you with OEBS in your daily work?
  - h. How user-friendly do you find OEBS?
  - i. How good is the information quality in the system?
  - j. How good is the quality of the system?
  - k. How good is the service of the system?
  - l. Describe the process and specification of who is talking to whom
3. Institutional structures and sensemaking processes
- a. Imagine that a new employee becomes a member of your group—please answer the following questions: (1) What would the new employee notice? (2) What should the new employee learn? (3) What would the new employee consider as special to this new work setting?
  - b. Interpretation of process: (1) How is the process interpreted? (2) Could you have acted differently? (3) Would you have acted differently if you were to decide?
  - c. What procedures (rules) do you have to follow when you use OEBS? (1) To what extent are these procedures formal or informal? (2) How does the company follow up on the use of the procedures? (3) What happens if you do not follow the procedures?
  - d. What attitudes, values, norms characterize your work in the department?
  - e. Do you share these norms in the entire group? Or do differences exist?
  - f. Does OEBS influence attitudes, norms and values—and how?
  - g. How would you describe the culture?
  - h. How would you describe your work situation? (Metaphors, analogies, stories, anecdotes, plays).
  - i. How would you describe your work with ES? (Metaphors, analogies, stories, anecdotes, plays).
4. Expectations to the re-implementation project
- a. What are your expectations to the new Release 12?
  - b. How do you think the new Release 12 will affect your work? (in the first three months and in the long run)
5. Open questions
- a. Are there other conditions that you would like to mention in connection with our talk today?
  - b. Are there questions or topics that you would have liked me to ask or talk about?
  - c. Could it be useful for me to discuss with other persons the topics that we have already discussed? If so, with whom?



## Appendix B: Codes from analysis in NVivo

<i>Comments on the re-implementation of AccSys in the finance department at SCANDI</i>			
<i>Codes</i>	<i>Sources<sup>1</sup></i>	<i>References<sup>2</sup></i>	<i>Created on</i>
Working Practice well established	6	14	13-08-2009 12:31
Well-defined work procedures and roles	1	1	26-10-2009 08:07
Well-established support organization	4	5	14-08-2009 08:39
We are in the same boat	3	3	13-08-2009 13:38
A long process (the first AccSys version was implemented in 1996)	2	3	11-08-2009 10:38
The several delays in launch of RE-ES project have increased the quality	1	1	13-08-2009 13:42
Support employees at Oracle know the system very well	1	1	13-08-2009 13:31
Started with many customizations which have decreased since	6	9	11-08-2009 10:44
Routines (it has always been like this)	1	1	26-10-2009 08:07
Revisions and regulations (norms, rules, procedures)	1	1	26-10-2009 08:06
Quality of work is important	1	1	26-10-2009 08:06
Perceived improvements after RE-ES launch	5	8	14-08-2009 09:14
Culture: peer review, control, police	1	1	26-10-2009 08:07
Optimize procedures	1	1	26-10-2009 08:06
Local module responsible has both IT and business knowledge	1	1	26-10-2009 08:02
Keep customers satisfied and happy	1	1	26-10-2009 08:06
Job fits well with personal working style	1	1	14-08-2009 08:56
Firing people can cause a forced adaptive attitude among employees	1	1	14-08-2009 10:17
AccSys is perceived to work well	1	3	13-08-2009 12:32
AccSys is perceived as the hub of universe i.e. very important system	2	3	13-08-2009 11:46

<i>Comments on the re-implementation of AccSys in the finance department at SCANDI</i>			
<i>Codes</i>	<i>Sources<sup>1</sup></i>	<i>References<sup>2</sup></i>	<i>Created on</i>
Finance employees have been in Finance for many years (10, 20 or even more)	5	7	11-08-2009 10:39
Finance employees are a harmonic group	6	7	13-08-2009 12:57
Small number of users in finance department (5-10 heavy users and 30 users in total)	2	3	13-08-2009 11:39
Few or no suggestions for functional improvements of Release 12	5	6	13-08-2009 13:30
Few bugs in AccSys (spring 2008)	1	1	13-08-2009 11:45
Familiar with AccSys	1	1	26-10-2009 08:05
Fairly quick stabilization after Release 12 go live	5	10	13-08-2009 13:12
Everyone makes an effort to get their work done	1	1	26-10-2009 08:06
Decoupling of de-central users with pre-systems like APPROVE for invoice handling and travel expenses	1	1	26-10-2009 08:03
A secure work environment	1	1	26-10-2009 08:07

<sup>1</sup>Sources refer to the research material in NVivo such as transcriptions, minutes, press-releases etc.

<sup>2</sup>References refer to the number of coding instances in NVivo.

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