ERP and organizational misfits: An ERP customization journey

Eli Hustad, Moutaz Haddara, Baldvin Kalvenes

Abstract

Enterprise resource planning (ERP) projects are complex and resource demanding. Some ERP projects fail due to what is called ‘misfit’ between the adopting organization’s business requirements and the ERP’s functionalities. Existing literature has studied how ERP systems match to different organizations and have argued that there always exists a gap between the business rules embedded in the system, and the practices and processes that exist in organizations. Thus, tailoring might be an important procedure during ERP implementations, in which the ERP customization takes place in order to ensure the compliance with the organizations’ critical business processes and requirements.

Via an in-depth case study, this research investigates how the different ERP tailoring types defined in literature correspond to different types of misfits identified in an ERP implementation project at a large public organization. The study results suggest that there is a correlation between tailoring types and categories of misfits. In other words, different categories of misfits can be decisive for the type of customization being used. These categories can be organized into four main influences that affect tailoring; strategy, project, system and institution. Moreover, internal institutional factors that are linked to system acceptance, such as culture and resistance could affect tailoring.
1. Introduction

Enterprise Resource Planning (ERP) systems provide a standardized and seamless integration of all the information flowing through the various business functions. A seamless integration, however, is not possible without the system being configured suitably by selecting the correct modules to implement and by setting the right parameters. ERP packages are purchased or leased (cloud-based) from ERP vendors, and this means that the system is developed in advance instead of being developed in-house within an organization. Consequently, organizations need to adapt the way they work to fit with the ERP functionalities. When organizations implement an ERP, they go into a long-term relationship with their ERP vendor. Thus, the implementing organization is dependent upon the vendor upgrades and functionalities. Because ERP systems are designed in advance to fit many different organizations, they consist of embedded best practice solutions. Best practice solutions are often developed in collaboration between the vendor and the most influential customers and therefore best practices do not always represent the majority of enterprises’ conduction of business. In fact, it is widely argued that an ERP system cannot improve performance without having the customer organization restructuring its operational processes. Therefore, many organizations go through the complex business process re-engineering (BPR) process in moderate or radical fashions to realize the benefits of the new system.

Despite that ERP systems have existed for several decades, still a high percentage of implementation failures are documented. For example, Parr and Shanks have studied several ERP projects and state that 90% of ERP implementations exceed either budget or deadlines. Likewise, Jones argues that the majority of ERP implementations dramatically cross their estimated time schedules and budgets. In addition, a recent survey published in Panorama Consulting’s annual ERP report for the year 2015, suggests that approximately 41% of the participating organizations have received 50% or less of the expected benefits and process improvements from their ERP implementations. A successful ERP implementation requires that the ERP system fits the organizational business processes. ERP systems are usually bundled with predefined and built-in assumptions and procedures on how an organization's business processes should be handled. These procedures and assumptions will virtually never be perfectly adapted to the organization implementing the ERP system. Thus, previous research has studied how ERP systems correspond to work routines and processes in different organizations, and have concluded that there always exists an aperture between organizational practice and the way an ERP system works, regardless organization. The phenomenon is often referred to as "misfit" or "misalignment" and describes the gap / spacing between the ERP system's capabilities / functionality and organizational requirements and needs.

This study explores the types of misfits and tailoring types in an implementation project at a large public organization in Norway. In addition, this study investigates and identifies the connection between misfits and tailoring types in the target case. It also seeks to reveal factors that could influence the decision-making process regarding tailoring issues. The results contribute to enrich our understanding for why organizations choose system tailoring and how their choices relate to misfits and organizational issues.

The rest of the paper is organized as follows. Section 2 presents the study background and adopted theoretical lenses in this research. The research methodology and target case are illustrated in section 3. Section 4 presents an overview of the main findings. A discussion is then provided in section 5, followed by conclusions in section 6.

2. Theoretical background

2.1. Previous research on ERP customization

ERP customization has received increased attention in the ERP implementation literature. Previous research studies have for instance focused on cultural misfits, types of customization and particular choices, functional misfits, customization as a result of ERP resistance, experienced misfits that are not documented in the formal specifications, and identification of specific reasons for doing customization. Furthermore, alignment between organizations and ERP systems is put forward as important to get a successful implementation. In general, organizations may encounter problems because they do not understand to which degree an enterprise system is in line with or correspond to organizational needs. A strategy for reducing this potential misfit is to tailor the ERP system. The words of “tailoring” or “customizing” are used as terms that refer to the adaptation of an ERP system.
In this paper we adopt the following general definition of misfits: *Misfits are external manifestations of the differences between two worlds: that of the organization’s needs on the one hand and the system's capabilities on the other*\(^\text{18, p.440}\). It is quite common that before an ERP project starts, a gap analysis is performed as a part of selecting the adequate ERP system. This involves putting effort into a detailed analysis of misfits during the design phase of the system implementation. The outcome of this analysis determines needed adjustments and configurations of the system. Since this task will determine how the future business processes should be performed by using the ERP system, it thus becomes a crucial step for a successful ERP implementation\(^8\).

Different categories of misfits can be decisive for the type of customization that needs to be undertaken\(^12\). Some tailoring types stem mostly from deep defects in how the system attempts to model reality and are often related to externally imposed norms in the industry, or institutional laws and regulations \(^19\). Other forms of tailoring could be due to limitations or defects in surface structures (e.g. user interface) in the ERP system, or the organizations’ own voluntary adopted processes and requirements.

To secure a better match between the ERP system and the organization, there are four different methods as recommended by Soh et al.\(^14\); (1) organizations may fully adapt to the processes embedded in the ERP system (vanilla), (2) organizations could partially accept the shortages within the ERP system and choose to ignore some of their previous requirements, (3) organizations may find temporary solutions or workarounds without changing anything in the ERP system. This may involve introducing manual work steps or finding other alternative ways to use the system. Or, (4) tailor the ERP system to comply with the needed functional requirements\(^14\). In a study by Luo and Strong\(^3\), they developed a framework to understand the ERP tailoring process, which differentiates between process customizations and software customizations. The authors put weight on the importance of the organizational capabilities for addressing misfits and for understanding the consequences of tailoring\(^3\). In the same line, Hong and Kim\(^7\) point to the importance of evaluating how well the ERP system and the implementing organization align. The study accentuates other factors outside misfits that are at play. These factors include resistance to change, the extent of ERP customization, and the organizational change capabilities for adapting to new processes\(^7\). Other studies have made a fairly different categorization of misfits into; functionality, data, user, role, control and organizational culture\(^16\). Each of these categories is then divided into issues arising from the functionalities of the ERP system that are missing, and the potential problems that could arise due to the intrinsic characteristics of the organization, which prompts the need for both integration and standardization. Decision drivers for tailoring are not necessarily rational drivers. These decisions are influenced by requirements specification and existing knowledge about the ERP system\(^11, 15\). In addition, strategic prioritized business units, the maturity and complexity of the system, institutional factors in terms of rules, norms, and culture, will all make an influence. Collaboration with ERP vendor, user involvement, implementing team composition, implementation methodology, project management, and the existence of a modification approval process are acknowledged as influencing factors.

On the other hand, the high number of unsuccessful ERP projects may be linked to the excessive degree of customizations in these systems. There is broad agreement that adapting the ERP system may lead to increased costs, time, resources, and complexity in future upgrades. Therefore, it is a common belief that the degree of tailoring should be minimized\(^1, 12, 20, 21\). However, tailoring is often required and executed\(^10-12\).

### 2.2. Problem statement

This study seeks to identify the different types of misfits and tailoring that take place during ERP implementations. Moreover, this study explores and rationalizes the connection between these misfits and tailoring types. It also pursues to reveal factors that make an influence on the decision-making process regarding several customization issues. The results contribute to enrich our understanding about why organizations choose customization and how their choices relate to misfits and organizational issues. Thus, the following research questions have guided this research: (1) how do organizations utilize tailoring to tackle misfits that exist between the business processes and the embedded functionalities in an ERP system? (2) Which factors may influence the decision for tailoring an ERP system?

To explore these research questions, we conducted an in-depth case study to increase our understanding of ERP customization. First, we developed a conceptual framework based on previous literature and tailoring types adapted from practice. This conceptual framework was developed in order to support the analysis of the findings in our target
case. The framework constitutes a theoretical foundation and illustrates various kinds of tailoring and their relationships to misfits, in addition to factors that make influence on customization. The framework is presented in the following section.

2.3. Conceptual framework for ERP customization

The study utilizes a conceptual framework that combines certain categorizes of misfits and different types of tailoring, which are used in practice (figure 1). The framework builds upon former research\textsuperscript{10, 11, 15, 19} combined with customization types extracted from the methodology of the consultancy company involved in the project at our target organization.

![Conceptual framework applied to analyse the target case](image)

The framework indicates that misfits, from an institutional perspective, may stem from externally imposed forces such as guidance from the authorities or norms in the industry, or originate from more volunteers structures, which may be their own choices management has taken in relation to differentiate themselves in the market\textsuperscript{22}. Looking at the gap between the ERP system and the organization from an ontological perspective, in which the ERP system tries to represent reality, misfits can be of deep characteristics caused by things, properties, states or transformations that are errors or deficiencies in the system\textsuperscript{19}. In addition, surface aspects can cause misfits, if the system does not provide the appropriate format for reports, does not provide the suitable roles to access information, or does not have a proper user interface. The framework also shows that the decision to carry out tailoring is affected by various factors and is influenced by a diversity of stakeholders and social groupings. These factors are related to strategy, project, system and institution\textsuperscript{10, 11, 15}.

| Type of tailoring | Explanation |
|-------------------|-------------|
| Report            | A list or extension of information from the system. Despite standard reports offered by the software, the term report in this methodology refers to custom and developed reports. These reports are built to meet specific requirements. |
| Interface         | An interface defines the data and operations of an application or a component used to interact with internal or external applications / components. |
Enhancement  Improvements (new functionality) not available in standard SAP
Form        Form is adapted to input data that is designed to meet a specific requirement. E.g., a custom form to be printed.
Workflow    The sequential flow of tasks and information in a business process.
Portal      Website solutions; it is primarily a form of interface, but can also be compared with ‘Extension’ since there is additional functionality. An ‘Extension’ explains how to change the functionality of the system, which does not involve what has been done via configuration. It is performed by adding or changing the code of the software.

The different types of tailoring (table 1) in this research were adapted from Anderson\textsuperscript{23}, who suggests four types of tailoring regarding the SAP system; (1) Enhancements; to develop improvements (new functionality) not available in SAP, (2) Reports; to develop custom reports that managers have requested to support the operation of the enterprise, (3) Forms; To develop custom forms that are needed to register new data in the system (in way that avoids human errors in data inputs), (4) Interface; to connect SAP with other systems, and (5) Conversions; to develop special converting programs that are capable of transferring data from one system to another. In addition, tailoring types of the consultant company provided input to the framework. However to fit the organization under study, which among others needed online functionalities, some adjustments to the types of tailoring were done. See “selection of tailoring” in figure 1, which represents the types of tailoring applied to handle misfits in this case study. The tailoring types encompassed reports, interface, enhancements, forms, workflow and portal.

3. Research methodology and case description

We have conducted a single in-depth explanatory case study\textsuperscript{24}. Six face-to-face qualitative semi-structured and dialogue-based\textsuperscript{25} interviews were carried out. The interviews were conducted in one Norwegian public service organization. The participants included a mixture of stakeholders who have been involved in the ERP system implementation at the target case: 3 informants from the case organization, 3 interviews with consultants from an international consultancy firm that served as the implementation partner of the ERP. All interviews were recorded and later transcribed. Some interviews were conducted in Norwegian and were later translated to English. The variety of interviewees’ backgrounds stimulated different perspectives that enriched the data collected through data triangulation\textsuperscript{26}, and the analysis consequently. In general, a convenient access to all the resources needed for the successful completion of this research was granted, as one of the authors worked at the consultancy firm involved in this ERP implementation project at the time of conducting this research.

3.1. Data Collection & Analysis Overview

The data collection consisted of interviews and observations as primary sources, and documents as secondary sources. Since one of the authors worked at the consultancy company, access to various data resources became feasible. Hence, some data was also gathered through the participation in workshops and meetings with the target organization. For an overview of the case and informants, see table 2.

Access to project documents and requirement specifications were essential for a deeper understanding regarding the context and reasons for tailoring/customizations, if any. While the observations involved participations in discussions regarding the solution, however, the authors were not involved in the final decisions regarding the ERP tailoring. The data analysis comprised several stages in terms of transcription of interviews, data reduction and data visualizations. In addition, data categorization, and triangulation of integrated interview data, observation data and documents were carried out for pattern identification (e.g.\textsuperscript{27}). All the conclusions were gradually developed and were verified against new follow-up communications with interviewees and documents.

Table 2. Overview of case organization and informants

| Org. Name | Org. Size | Industry | Informant | Role | Duration (Minutes) |
|-----------|-----------|----------|-----------|------|-------------------|

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3.2. Case organization - PSO

The case study was conducted in one public service organization (PSO). The real organization name has been concealed for anonymity. PSO has approximately 17,000 employees and have earlier implemented an SAP ERP system in 2003. The aim of the ERP system implementation was to establish a common platform and management system to enhance control and governance of organizational data and several business functions such as human resources, finance, and accounting. However, this ERP implementation was incomplete and regarded as problematic and challenging. Thus, PSO decided on having a fresh ERP implementation and extension in 2012. One of the main objectives of the project was to develop standardized work processes for performing maintenance and managing PSO’s resources. Thus, PSO decided on adding and implementing logistics and maintenance modules to the existing ERP. At the same time, maintenance and supply operations should be closely integrated, and a solution for joint management of PSO’s investments should be developed. In addition, the SAP ERP system should also be integrated with the existing legacy solutions at PSO. When this research study was conducted, the project was in its ‘business blueprint phase’, as defined in SAP’s Accelerated SAP (ASAP) implementation method. Finally, it is worth noting that this study has mainly focused on the ERP extension project, including the logistics and maintenance functions/modules.

4. Overview of findings

There may be several reasons that lead organizations to tailor their ERP systems. Primarily tailoring is conducted because the customer wants some different processes than the ones offered in the ERP system. Thus, in many cases tailoring is performed because the customer wants exactly the same existing business processes, or the information they possess in another system. It is also possible that the customer does not understand the ERP system's standard processes and lacks knowledge about how the same information can be obtained in other ways than tailoring. Gap-analysis was performed in PSO and this provided a guide to develop solutions according to the PSO’s requirements. The gap-analysis resulted in 2000 functionality requirements. There were several misfits between the ERP system and the organization regarding the functionality requirements, and the number of misfits that needed tailoring comprised 285 tasks. Figure 2 illustrates misfits according to ontological and institutional categories. In general, 99 of the tailoring requirements were classified as complex (Imposed-Deep); the others had medium or low complexity. Most of the complex tailoring requests belonged to the Imposed-Deep category (99), and Imposed-Surface (100), and the others were distributed as the following; Voluntary-Deep (30), and Voluntary-Surface (56). Enhancement and Interface have most complex tailoring requests (51, 44), Report has quite high (66 Imposed-Surface), and Form and Workflow have fewer tailoring requests with high complexity (see figure 2).

With respect to Report, tailoring encompassed report output and presentation format. As shown in the below figure, Report had most instances distributed over imposed-surface (highest) and voluntary-surface categories. Most requirements referred to a need of generating reports of information, which were not standard in the SAP system. In some cases, reports had idiosyncratic requirements for following a specific standard, which the company needed to adopt. Reports were sometimes closely linked to Enhancement or Interface, as these would require reports with extra information, and the extra functionality could support this requirement. Most of the Report tailoring requests were categorized as Imposed-Surface because they comprised regulatory requirements, rules and procedures. Meanwhile, many of the requirements relate to the organization’s industry and norms. A typical example of an Imposed-Surface report was a guide for an overall report to the Foreign Ministry that would give an overview of a variety of materials.
to be exported abroad. Thus, it was important that PSO could generate financial reports fulfilling special rules in public sector. In contrast, the reports categorized as voluntary-surface were internal reports needed in the processes of the organization according to current practice.

Interface tailoring comprised integration with both internal and external systems. External systems were often bolt-ons from authorized third-party suppliers, systems of partners, and systems acquired or developed by the organization itself. A typical example of voluntary-surface was the requirement for integration to third-party software (Bolt-on) that can generate graphical illustrations of organizational structures. There was also a requirement that the solution should be able to support the use and automation of surveys to perform controls and inspections. The SAP standard supports the use of surveys but an interface is needed to process responses automatically. Interface tailoring classified as Imposed-Deep involved integration with partners’ system to electronically show order confirmations from suppliers; this was a norm in the industry imposed by the authorities.

Regarding Enhancement, PSO needed to follow specific health, safety and environment (HSE) rules. These types of tailoring are categorized as Imposed-Deep. PSO had to document the amount of dangerous goods that organizational units dispose and store. In addition, tailoring related to the production was needed since PSO had not followed the SAP standard in the former implementation project of purchasing modules. Thus, the former tailoring also needed updates. Also, PSO needed to tackle sale of waste (steel, paper) by using standard functionality of order, accounts payable and accounts receivable. This was not possible by standard SAP, and a program was needed to deal with waste.

Other tailoring requests of Enhancement comprised user rights regarding sensitive information, and reporting of events that were typically for this type service organization. Tailoring of voluntary categories comprised long-term planning, estimation and risk management. For example, they required that the solution should offer a risk catalogue for risk management of projects that was beyond standard. Our findings suggest that Enhancement was the only tailoring type that was represented in all-major categories of the conceptual framework.

Tailoring with respect to Form comprised equipment reporting, certifications and delivery documents. These documents have specific format demands and need to be printed. Examples of tailoring of imposed category were generation of acquisition protocols according to public laws and regulations of acquisitions. Example of a voluntary-imposed tailoring requirement was that the solution should support meta-information and fact sheets about projects and portfolios in the organization.
Concerning **Workflow**, requirements within the Imposed-Surface category comprised reporting and notifications to the authorities. For example, PSO is required to report deviations and special events related to the organization’s daily operations. There was therefore a demand from the customer to be able to generate and send information to the appropriate authorities about incidents and deviations based on given statuses. The standard solution included functionality to detect deviations and incidents; however there was a need for tailoring to generate notifications via workflows because authorities needed to access this information. Workflow had mostly tailoring types within the surface category; however, instance was of the imposed-deep category. This tailoring was considered as a workaround since this concept was missing in the system. The tailoring comprised agreements between foreign suppliers and PSO, in which repurchase was an important part. The solution should be able to follow up on repurchase occasions and a contract between the foreign supplier and the ministry should be established and have possibilities for upgrades.

**Portal** tailoring fell under voluntary-surface, and focused on getting an adapted user interface that provided customized information for different user groups based on authorization. The requirement comprised more user-friendly screenshots and better access control based on users’ affiliation. One example was development of a Wizard to support the user in which all necessary information should be included and available in the same screenshot.

The research results suggest that the decision to carry out tailoring of the ERP system is something that happens continuously throughout the ERP lifecycle. Before the project started, PSO has prepared a list of functional requirements. Based on this list, the implementation partner developed a proposal describing which requirements that require tailoring and which are already an SAP standard. The contract at the start of the project utilized the proposal and contained description of the required customizations. The gap analysis was also essential and served as a business case, in which it committed both the customer and the vendor. The following statement underlines its importance: “Absolutely, a fit-gap analysis is a business case on its own. It is a very serious process. It is usually where the discussions should take place. You make a blueprint and everyone agrees. Actually, the fit-gap analysis is where you have to take a closer look at reality. We have these problems. You need to make a business case out of these problems (...). The fit-gap analysis is a combined effort between the client organization and the consulting company.” (Emp 3). Decision-making processes at PSO start at the different functional areas and at the BPM teams. They develop process models, and technical and functional documentation. New business processes are discussed in workshops in which functional experts from both customer and vendor participate. They discuss solutions based on the customer requirement. When process descriptions and process models are complete, the customer representatives review them and then the customer board reviews the information. In PSO’s project, no framework was used to whether they apply a tailoring approach or not. The focus was on the demands of the customer. The requirements were analyzed to decide if the company could implement a standard SAP solution, if not, tailoring was offered. PSO relied on the provider to suggest a solution, either by implementing SAP standard, third-party software, or by through tailoring. The decision was based largely on cost benefit analysis. Later, representatives from the customer side with functional expertise reviewed and approved the proposed process documentation. These customer representatives are not end-users; however, they possess extensive experience of related ERP systems. Quite often, business units disagreed on how to define their processes and the unit with the most power and influence controls the process: “In PSO, the organization is divided into four large business units. If one of them has a special need, it creates much commotion. Thus, disagreements within the organization arise about which direction they should take. Often the unit with the most power, and influential people or those who shouts the loudest gets their way.” (Cons 1). Another consultant pointed out “while the project is still ongoing; the decision-making process appears to be well organized so far. Resources are available in terms of experts and decision-making authorities, and the management team follows the project strategy. However, usually the problems start when the project ends and the customer takes over the ERP system. If the customer has not established a strict strategy for changes, it is likely that suggestions from users will be accepted and developed. These modifications would not necessarily have been developed as long as the external SAP experts were available and managed the project organization.”

PSO reported that they had experienced much difficulty because of previous tailoring. They had vast problems in relation to system upgrades. Thus, they felt that they were lagged behind, and were dependent upon a lot of testing to see if the upgrades can be implemented without too much challenges. In addition, follow-up of tailoring has been lacking. While there has been a focus on showing benefits on a strategic level; however this has not been emphasized. In retrospect, “it has been difficult to identify the benefits”, as an informant stated. Documentation routines in the
project have also been insufficient. There were technical configuration documents but no documentation of overarching processes. “They [client] have made many adjustments so it’s hard to keep track. They expect us to know what has been done earlier on, but we were not involved in the former project, and thus it is very hard to understand what has been done without documentation.” (Cons 1). Another informant stated that tailoring could have serious effects without proper governance: “The organization becomes slaves of the programmers because they go far away from the standard that is actually controllable. And that means when you upgrade you don’t know what you actually have installed. In fact there are implementations that I had to install one by one piece of an upgrade, instead of installing complete automated patches.” (Cons 3).

5. Discussion

In this section, we discuss the main reasons for doing tailoring in PSO, and how that affected the organization. We mainly focus on misfits of imposed categories, and how the history of former ERP projects in the organization affected the current project.

The results of the analysis show that the institutional imposed categories are those that have the highest occurrences of tailoring. Thus, PSO has a high number of imposed misfits that needed to be solved. Customization followed because of specified demands of functionality that were outside the standard ERP system. Laws, regulations and norms from the industry externally imposed these requirements. These types of requests (imposed-deep) are normally identified early in the project. PSO as a public organization has specific regulations and norms to deal with compared to private enterprises. Many of the tailoring instances were categorized into the institutional categories because of distinctive aspects prevailing for public enterprises and requirements for reporting to central authorities. This may also explain the high number of report outputs. PSO has a complex system landscape with many modules and integrations with other systems. The organization is required to have digital collaboration with vendors and to perform information exchange between partners. This is probably the reason for having many instances of the imposed category of “transformation”. Misfits that arise later in the implementation process are to lesser extent of imposed characteristic. Change requests during the project are mostly of voluntary structures desired by end-users.

Previous customization of the ERP system made impact on the present project in PSO and resulted in definition of new misfits in the requirement specification. It became clear that the history of former customization caused new demands for tailoring at a later stage. Participants in the project admitted that the complexity of the system had also caused unnecessary customization because the project participants lacked knowledge about the system, and the demand specification was on an abstract level and difficult to understand. The transition from legacy systems to the ERP system was tremendous for PSO. Thus, PSO had performed customization to make the transition between legacy systems and the ERP system easier. Light argues that organizations are doing that because the employees want to keep the same functionality that was available before in legacy systems. This can also be linked to resistance towards the ERP system being implemented and as a consequence tailoring is performed. PSO had different business units that resisted changes in processes trying to avoid adaption to a superior standard process. As a result, eminent disagreements between the units arose about which direction to take. It appeared that the processes were not conducted in the way that was intended because users tended to work in the way they had done previously. This corresponds with previous research studies, for example, Haines who argue that tailoring may be connected to resistance, which again can cause workarounds of the system. Workarounds are a way to cope with challenges that ascend from the implementation of a complex ERP system; they are also a way to struggle against the new system. The system caused resistance among users in PSO since these kinds of changes are difficult to cope with. Even if new routines improve practice, they may create resistance if the complexity is high and the learning curve is steep. This loss of flexibility will normally create challenges, and one way to solve this is to do more customization. The system’s disciplining effect replaces flexibility in the organization with standardization. Furthermore, users of the ERP system can oppose ERP implementation and require tailoring because they are not willing to change the way they work, because of fear of losing their jobs, power or knowledge. This study does not support this directly; however, since PSO experienced a lot of resistance, it is likely to consider that employees had fear of losing positions and power in the organization. Organizations are often inexact regarding the formulation of requirements and it can be difficult to evaluate these against the ERP system functionality. This in turn can cause the client choosing the
wrong system and more tailoring is needed. In PSO the demands were diffuse and difficult to understand. Light 11 points out, however, that although the requirements are simple to understand, it is not necessarily so that the customer is satisfied with what they get presented by standard processes. It is important to take into account that the customer wants changes in the demands along the project, since over time the customer learn and understand how the system works in practice. Even there were many end-users that wanted tailoring because of abovementioned reasons; the study also documented worries about tailoring. Because of the complexity of the system, employees with certain knowledge about the system were worried that too much tailoring could cause extended effects in terms of increased costs, more complexity and future problems. Rothenberger and Srite 15 support this finding, which illustrates that more knowledge about the system in PSO can increase motivation and acceptance, and also reduce requirements for tailoring of voluntary characteristic. PSO was not only interested in replacing legacy systems, in addition they wanted to restructure processes, which is an important argument for limit tailoring of the ERP system. The learning process and the experiences from former ERP projects resulted in a different attitude towards tailoring of the system and less resistance in current project. For example, results showed that the customization approving process in PSO has become stricter and they established a formal approval process for change requests in their recent project, which is good measure to prevent unnecessary adjustments. However, even if PSO tried to keep to standard SAP, the history of former customization provided additional necessities for tailoring. Furthermore, it was impossible to avoid tailoring that came from institutional demands. Voluntary-Surface misfits, however, should not be adapted unless they are linked to strategic objectives and upcoming imposed structures. PSO should be alert for such misfits and be consistent when making decisions. Good change management and sufficient staff training are also good measures to reduce requests for change.

According to Law et al. 33 ERP implementation in organizations is a continuous maturity process which the organization needs to go through to build knowledge. Overall, PSO has learned from former implementations, and in this sense has more knowledge about the system and has become more mature with respect to standard processes.

6. Conclusions and implications

This study focused on tailoring issues in an ERP system implementation at a large public organization. Embedded rules in a standard ERP system and business processes in an organization are not always in accordance with each other, and that may cause misfits and raise the need for tailoring. One of the main objectives of this study was to obtain more knowledge about how organizations can handle these potential misfits. By analyzing requirements specification and associated solutions, this study suggests that there may be a connection between types of tailoring and the different categories of misfits. In addition, this research utilized a conceptual framework that combines certain categorizes of misfits and different types of tailoring, which is used in practice. Our results show that the tailoring decision is a process that is influenced by a diversity of social circumstances; resistance to the system, the transition from legacy systems, organizational knowledge about the ERP system, and maturity of the organization. PSO experienced challenges, as the standard ERP software did not embed functionalities that supported institutional demands and requirements from the authorities. Thus, in this case the software was not ready to use as an off-the-shelf package.

Finally, we recommend that ERP vendors who have a desire to increase their market share in a country or sector can benefit from incorporating imposed structures into their software to take institutional demands across countries into account, and may in the future consider offering their solutions with country-specific compliant standards.

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