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Critical Success Factors for ERP Consultancies

A case study

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Abstract. ERP implementation is a complex and expensive project for organisations because it touches upon social, behavioural and technical issues. This article presents an in-depth case study of an ERP consultancy in order to comprehensively understand ERP implementation from the consultancy's perspective. Interviews were conducted with consultants, project managers, senior managers and other employees. The interview responses indicate that both the client and the consultancy measure success in terms of quantifiable units of time, cost and scope. In addition, qualitative measures of *client maturity* and *client satisfaction* are central to achieving project success for the consultancy when implementing ERP systems. Through incorporating critical success factors (CSFs) in the project methodology, the consultancy can ensure repeatable implementation processes, which contribute to a higher probability of success for both the consultancy and its clients. This study contributes by identifying consultancy CSFs: project management, IT environment, training and education, change management, and maintenance and support. Furthermore, the client's maturity, and the management of client expectations are identified as unique CSFs for the ERP consultancy. This study will be beneficial for ERP consultancies, practitioners and researchers.

Key words: Enterprise Systems; ERP Systems; ERP Consultants; ERP Consultancy; Critical Success Factors; Organisation.

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1   Introduction

Due to the various benefits of ERP, many organisations have adopted ERP systems over recent decades, resulting in a global ERP software market of USD 32 billion (Teo 2017). However, fluctuating levels of success have been reported over this time (Hustad and Olsen 2014; Svejvig and Jensen 2013). Although ERP systems have existed for several decades, implementation of ERP systems remains a significant challenge in both research and practice. Despite a general understanding of the challenges involved, failures in ERP implementation remain frequent (Chakravorty et al. 2016; Fruhlinger et al. 2020; Hustad et al. 2016; Panorama 2019). Research on the subject has largely focused on how to reduce the risks involved with ERP implementation. Over the years, the broad experiences of many companies that have implemented ERP systems and of associated stakeholders have emerged into a common understanding of the necessary factors for ERP implementation to succeed. The combined findings have been formalised as a set of critical success factors (CSFs). There is general agreement that the most cited CSFs are imperative for a company to meet in order to succeed in implementing an ERP system (Finney and Corbett 2007; Ram et al. 2013; Tarhini et al. 2015).

This paper addresses one such mandatory CSF for a company implementing ERP, namely that the company must utilise experienced consultants who have repeatedly implemented and used ERP over many years (Attewell 1992, Xin and Choudhary 2019). A major challenge in ERP implementation is the fit of the ERP capabilities with the client's existing organisational structure and processes (Hustad et al. 2016). It is difficult, if not impossible, for a single company to obtain the technical and organisational know-how required for evaluating this fit prior to implementing the ERP system, as such competence is gained through implementation and use over many cases (Attewell 1992, Xin and Choudhary 2019). The cross-functional operation of integrated ERP systems requires an end-to-end perspective on operations that companies rarely have. The use of experienced consultants who have repeatedly implemented and used ERP has therefore been defined as a CSF for companies in their ERP implementation by many researchers (Alsulami et al. 2016; Helo et al. 2008; Ifinedo 2011; Lech 2016; Markus and Tanis 2000; Ram et al. 2013; Teo 2017).

So far it has been limited focus on the important role and perspective of the ERP consultancy. Due to the consultancies critical role it is important to gain more insight on the consultancy perspective in ERP implementation. This article presents an in-depth case study of a consultancy[1] in order to comprehensively understand ERP implementation from the consultancy's perspective. The results inform a set of seven CSFs for ERP consultancies proposed by this study: project management, IT environment,

training and education, change management, maintenance and support, client maturity, and management of client expectations. These seven CSFs for ERP consultancies resemble the CSFs for clients, but they have a somewhat different meaning for the ERP consultancy. Furthermore, the client's maturity, and the management of client expectations are unique CSFs for the ERP consultancy.

The remainder of this paper is structured as follows: Chapter 2 describes background concepts related to ERP consulting and implementation. Chapter 3 details the research methodology. Chapter 4 subsequently defines success and failure in ERP implementation from the consultancy's perspective. Chapter 5 presents the interview results related to CSFs for a consultancy. Chapter 6 then discusses the results in relation to the existing literature. Finally, Chapter 7 presents the study's conclusions along with limitations and future research directions.

2 Background

2.1 The evolution of ERP consulting

ERP consulting has its roots in IT consulting, which first emerged in the 1950s when companies began to use computers. One of the first known cases of IT consulting was a feasibility study for General Electric conducted by Arthur Andersen in 1953-1954 (Galal et al. 2012). Arthur Andersen recommended a UNIVAC 1 computer and a printer in this first IT consulting engagement, which also contributed to the start of commercial use of computers. Since then, the market for IT consulting has grown exponentially, even beyond the growth rate of general management consulting. For the last several decades, the market for IT consulting has greatly exceeded that of general management consulting. ERP consultancies in particular primarily focus on advising clients regarding the integration of business processes with ERP to support the client's business model and the digital transformation of their operations (Galal et al. 2012).

The value proposition of a consultancy stems from its competencies acquired through experience in implementing new ERP solutions for multiple clients, and through synthesising these experiences to create a unique competency in implementation issues (Attewell 1992; Srinivasan 2014; Xin and Choudhary 2019). Such cross-company competence in implementing new ERP solutions cannot be held by an individual client; thus, a client needs the competence of an ERP consultancy. This is evident both

from the extensive and increasing use of ERP consultants by clients (Galal et. al. 2012), and from the fact that clients define the use of ERP consultants as a CSF.

2.2 The concept of critical success factors

The 'success factors' concept introduced by Daniel (1961) eventually led to the introduction of Critical Success Factors (CSFs) by Rockart (1979) as an approach to extract critical information from the vast data generated by management information systems. Rockart characterised CSFs (1979, p. 85) as "the few key areas where things must go right for the business to flourish". CSFs have since been extensively used to guide manager decisions in client companies (Alsulami et al. 2016; Chang et al. 2013; Markus and Tanis 2000; Ram et al. 2013; Somers and Nelson 2001; Sun et al. 2005; Tarhini et al. 2015; Teo 2017). Together, many authors have identified an extensive set of CSFs, typically between 20-60, with common factors including top management support, training and education, change management, end-user involvement and use of ERP consultants.

2.3 The 'use of ERP consultants' CSF

The CSF 'use of ERP consultants' for clients is of particular interest for this research, as it is evidence of a general agreement around the need to involve an ERP Consultancy for ERP implementation. This CSF is highly rated in research. Finney and Corbett (2007), for example, analysed 45 articles and identified 26 CSFs, ranking the CSF 'consultant selection and relationship' as the 7th most important. Tarhini et al. (2015) similarly conducted a literature review of 35 articles and identified 51 CSFs, of which 'the use of ERP implementation consultant' was ranked as the 8th most important. Ram et al. (2013) also conducted an extensive literature review, resulting in an un-ranked list of 27 CSFs including ERP consultants. The leading role of consultants in ERP implementation has been identified and considered in prior research (Ifinedo, 2011). Within the research on the operation of ERP consultancies, several studies have examined ERP consultants' views on their clients (Helo et al. 2010; Lech 2016, Tarhini et al. 2015). Helo et al. (2010), for example, interviewed 59 Finnish ERP consultants regarding their experience with ERP implementation for clients. Lech (2016) used observations from six projects and interviews with 18 consultants to understand the consultants' perspectives on dominant risk factors in enterprise system implementation for their clients. Tarhini et al. (2015) discussed CSFs from different stakeholders' perspectives,

including ERP consultants, on how to implement ERP. All of these studies focused on the effect on clients; none studied the operations of the ERP consultancy itself. Given the significance of ERP consultancies for successful ERP implementation, it is imperative to understand the key components for a consultancy to flourish, as observed by Rockart (1979).

2.4 CSFs for clients as potential CSFs for consultancies

The challenges of ERP implementation demand a carefully managed implementation process. Despite a general understanding of the challenges involved, failures in ERP implementation remain frequent, according to many studies (Chakravorty et al. 2016; Hustad et al. 2016) and business reports (e.g., Fruhlinger et al. 2020; Panorama 2019). Research conducted over the last several decades has largely focused on how to reduce the risks involved with ERP implementation. Over time, the findings have been formalised as CSFs. From the existing body of literature, the number of CSFs for clients are very extensive, numbering in the hundreds.

As the goal of this study is to investigate to what extent the CSFs identified for clients are relevant for a consultancy, we organise the CSFs based on the frequency with which they are cited in the literature following the approach of Sun, Yazdani and Overend (2005) and others. This approach results in a shortlist of the most common groups of CSFs. Each group represents CSFs with similar meaning. For example, top management support (Somers and Nelson 2001) is synonymous to top management commitment and support (Finney and Corbett 2007), sustained (top) management support/commitment (Ram et al. 2013) and management/organisation commitment/involvement (Sun et al. 2005). Some CSFs are not included in this group system due to their narrow focus, such as 'use of vendor's tools' (Somers and Nelson 2001), 'troubleshooting/crises management' (Finney and Corbett 2007), and 'data—master files' (Sun et al. 2005). Our shortlist of eight client CSFs is presented in section 2.4. An overview of CSFs investigated and the section they are discussed is given in table 1.

Top management support

Top management support is among the most cited CSFs, including by Somers and Nelson (2001), Sun et al. (2005), Finney and Corbett (2007), Ram et al. (2013), Alsulami et al. (2016), Lech (2016) and Teo (2017). It covers top management commitment and

CSF	Investigated	Discussed
Top Management Support	6.1	6.1
Project Management	6.2	6.2
ERP system and ERP Consultants	6.3	6.3
IT Environment	6.4	6.4
Training and Education	6.5	6.5
Maintenance and Support	6.6	6.6
Business Process Reengineering and Change Management	6.7	6.7
Client's Maturity	6.8	6.8
Management of Client Expectations	6.9	6.9

Table 1: Overview of CSFs investigated and the section they are investigated and discussed

support, and existence of a project champion. This CSF refers to the need for top management commitment and support throughout the entire project. High team morale is a CSF for ERP implementation and is mediated by a project champion.

Project management

Project management is a CSF cited by Somers and Nelson (2001), Sun et al. (2005), Finney and Corbett (2007), Ram et al. (2013), Alsulami et al. (2016), Lech (2016) and Teo (2017). This category includes effective project management, a well-coordinated project team, project cost planning and management and team morale and motivation. Project management is the application of different tools and techniques to execute projects effectively and efficiently, which is necessary in ERP implementation due to the complexity. Research has found that project management has a direct and positive

effect on implementation success (Ram et al. 2013). Team morale is related to the need for a project champion, and the project team should consist of the company's best and brightest employees in order to successfully implement ERP. Furthermore, cost should be known ahead of the project start, but an open budget strategy should be applied, because ERP implementation often incurs unexpected costs (Finney and Corbett 2007). Project management is included in this list, because project management skills, tools and techniques are necessary to reach the aims of ERP implementation.

ERP system and ERP consultants

The selection of ERP system and use of ERP consultants is mentioned by Somers and Nelson (2001), Sun et al. (2005), Finney and Corbett (2007), Ram et al. (2013), Alsulami et al. (2016), Lech (2016) and Teo (2017). The CSFs in this category include selection of ERP, implementation strategy and timeframe, and the selection and use of consultants as discussed in section 2.3. The ERP should match the organisation's needs as much as possible to simplify the implementation and minimise customisations. The implementation strategy and timeframe should also consider whether the system will be implemented as is (vanilla) or in a modified version (Hustad et al. 2016). ERP systems can be implemented in a phased approach or big-bang approach, and in a single- or multi-site approach. The implementation strategy should also consider a timeframe (Finney and Corbett 2007). Furthermore, organisational fit—meaning that the ERP fits the organisations' operations—is described as one of the factors leading to post-implementation success (Hustad et al. 2016; Zhu et al. 2010). The use and selection of consultancy firms as a CSF was specifically mentioned by all authors examined in this research. Ram et al. (2013) specified that ERP implementations during the 1990s and early 2000s faced difficulties in finding experienced managers and consultants, and had limited vendor support. Today, there is an abundance of both experienced consultants and managers.

IT environment

The IT environment is included as a CSF by Somers and Nelson (2001), Sun et al. (2005), Finney and Corbett (2007), Ram et al. (2013), Alsulami et al. (2016), Lech (2016), and Gupta and Misra (2016). The authors specifically referred to legacy system consideration, data conversion and integrity, system testing, existing IT infrastructure and cloud ERP. Finney and Corbett (2007), for example, maintained that current leg-

acy systems must be considered, and that it is critical to assess the IT readiness of an organisation, including skills and architecture. Data conversion and integrity in particular must be considered a CSF, as lack of integrity may cause serious delays in implementation. Furthermore, the right data must be fed into the ERP and integration with other internal and external systems must be ensured (Somers and Nelson 2001). Before GoLive, the system must be extensively tested to avoid any unforeseen problems (Finney and Corbett 2007).

Training and education

Training and education is mentioned by Finney and Corbett (2007), Sun et al. (2005), Ram et al. (2013), Somers and Nelson (2001), and Gupta and Misra (2016). Finney and Corbett (2007) suggested that training should be hands-on and should encompass the development of IT skills. It should ensure that knowledge is transferred from the consultants to the end-users (Somers and Nelson 2001). According to Ram et al. (2013), training and education has a direct and positive influence on operational performance. Motiwalla and Thompson (2012) further noted that training is often the first thing to be cut when it comes to budget issues. Training is often conducted post-implementation as a last-minute activity, because time before GoLive did not allow for sufficient training.

Maintenance and support

Maintenance and support (M&S) is a CSF listed by Ram et al. (2013), Somers and Nelson (2001), Law et al. (2010) and Gupta and Misra (2016). An ERP implementation project formally ends with GoLive. However, the implementation is never truly complete, as all systems must be maintained, supported and eventually upgraded (Somers and Nelson 2001). Law et al. (2010) underpined the importance of maintnance and support (M&S) by presenting a framework which demosntrates that the M&S outcome, together with the implementation outcome, is critical to overall ERP success. They argued that M&S is important in the ERP lifecycle and must be handled properly for the ERP implementation to yield benefits to the user organisation.

Business process reengineering and change management

Business process reengineering (BPR) and change management is a CSF mentioned by Finney and Corbett (2007), Sunet al. (2005), Ram et al. (2013), Monk and Wagner

(2012) and Somers and Nelson (2001). BPR was listed as a CSF by all authors examined in this research. Systems are built on best-practice process structures in generic firms. As a result, clients may face business process re-engineering needs when adopting ERPs to their company (Markus and Tanis 2000). Advising user organisations on how to re-design their business processes to best fit the ERP system is a task of a consultancy firm. BPR is also important for organisational change management (OCM), as it deals with changes in existing processes and how people react to these changes. Monk and Wagner (2012) argued that the key challenge in ERP implementation is managing people, not technology. Therefore, applying organisational change management is key to successful implementation and effective business processes.

Client's maturity

The major literature contributors are Sammon and Adam (2010), Motiwalla and Thompson (2012) and Chang et al. (2013). Sammon and Adam (2010) argued that many problems experienced in a later phase of ERP implementation originate during the preparation phase. The authors examined how principles of preparedness affect the outcome of ERP implementation. Sammon and Adam (2010) empirically related the principles of preparedness to the outcome of ERP implementation in four case firms in the post-implementation phase. The principles of preparedness, or user organisation's maturity as we refer to it, also relate to the work of Chang et al. (2013), who argued that user organisations must evaluate their own skills prior to ERP implementation. A low score in ability should be compensated by using consultants. This means that the gap between available ability and required ability should be filled by hiring consultants. The greater the gap, the greater is the need for consultants. This conclusion was also drawn by Motiwalla and Thompson (2012).

2.5   Consultancy's role in ERP implementation

The know-how required for evaluating the match of ERP capabilities with a client's structure and processes is difficult, if not impossible, to obtain prior to adoption by the client, as such insights are learned through implementation and use (Attewell 1992; Hustad et al. 2016; Pozzebon and Pinsonneault, 2012; Xin and Choudhary 2019). Chang et al. (2013) proposed in their study that consultants are needed to provide the expertise that the client lacks. Consultants serve as carriers of knowledge and provide technical and business expertise; they reduce the learning burden of clients and configure appropriate ERPs. The authors further stated that, "… studies on consultants have

progressed only to the roles and problems associated with relying on consultants to achieve organizational goals, with little work done on the more complex questions of the relationships between the the consultancy and the client …" (Chang et al. 2013).

The use of experienced consultants who have repeatedly implemented and used ERPs has been defined as a CSF for clients (See CSFs for Clients). Wang and Chen (2006) argued that successful ERP implementation relies on the effectiveness and smoothness of the ERP consulting process. The authors contended that the ERP implementation consists of effective communication, conflict resolution, support from external consultants and support from internal stakeholders. They concluded that consultants are critical in influencing the effectiveness of communication and conflict resolution. This means that consultants, offering high-quality service, mediate ERP implementation success. The use of consultants was also promoted by Motiwalla and Thompson (2012), who observed that before trying to implement an ERP, every organisation must evaluate its ability to successfully implement an ERP. If an organisation scores low for the ability to implement, they should seriously consider hiring a consultancy to provide guidance during ERP implementation.

In brief, the client's perspective on the role of a consultancy in ERP implementation has two sides. On one hand, a consultancy is crucial to achieving success in ERP implementation. On the other hand, consultancies are perceived as risk factors, for example, regarding knowledge transfer from the consultancy to the client.

We argue that the use of consultants is necessary, specifically when an organisation has limited internal capabilities, competence and knowledge. The consultancy's role is to help the client to implement the ERP. The consultancy thus fills the gap between existing and necessary internal knowledge.

3 Research methodology

To better understand the possible areas of conflict and the different perceptions on the role of a consultancy in ERP implementation, we conducted a case study (Yin 2014) consisting of 13 semi-structured interviews. The participants included a mix of employees at the consultancy under study who are involved in ERP implementation with details provided in table 2. The results from the interviews were synthesised with data from the information-sharing platform and project archive documents, allowing for triangulation (Bryman 2012) in the analysis. Access to all resources needed for the successful completion of this research was directly granted, because one of the authors worked at the consultancy at the time of conducting this research. The case study pro-

Interview #	Category	Participants	Type
0	Pilot interview	Employee A	In person
1	Interviews with project managers	Project manager A	Group interview with A and B in person
1		Project manager B	
2		Project manager C	Phone
3		Project manager D	Phone
4		Project manager E	Phone
5		Project manager F	Phone
6	Interviews with ERP business consultants	ERP Consultant A	Phone
7		ERP Consultant B	Phone
8	Interviews with senior managers	Senior manager A	Phone
9		Senior manager B	In person
10		Senior manager C	Phone
11		Senior manager D	Phone
12	Interviews with other employees	IT employee A	In person
13		IT employee B	Phone

Table 2. The 13 interviews. One interview was a group interview with two managers. All interviews lasted 1 hour

vided in-depth knowledge on the operation of the consultancy during ERP implementation for clients.

The stakeholders considered in this research are (1) client organisations that implement ERP and (2) ERP consultancies that support implementation by providing consulting services. The focus of this research is on (2) the ERP consultancy and how it should operate to be successful in delivering services to clients.

3.1   The case company, Merit

The case company, Merit, is a provider of consulting services and business software solutions founded in Norway in 2004 (Merit 2019). Since its inception, the consultancy has grown rapidly by acquiring companies in Finland, Sweden, Denmark, Switzerland, Germany, Italy and the UK. From its start, the consultancy was a channel partner for an ERP vendor. The case study for this research was conducted in the Norwegian business unit of the company, which represents the largest business unit of the consultancy focusing on ERP implementation for clients.

Merit has developed a project methodology to manage ERP implementation projects adhering to the four phases of ERP implementation 1) project preparation, 2) system configuration, 3) GoLive and handover, and 4) support, maintenance, operation and after sales (Monk and Wagner 2012). Since the last phase is is handled by a separate methodology at the consultancy, the focus of this research is of ERP implementation phases 1-3. The project methodology is supported by processes, templates, tools and metrics that ensure that the consultancy focuses on its CSFs.

Merit Consulting is the Norwegian business unit of Infor. In this research the focus is on the service line consisting of projects implementating the ERP-system Infor M3. The focus is on projects with Infor M3 installed at the customers premises, while the latest version of Infor M3 is a cloud based ERP system. Initial implications of cloud solutions for consultancies are presented in the *Notes on Cloud ERP* section.

4   Success and failure—consultancy's perspective

The interviewees defined success from the consultancy's point of view as achieving the goals established at the beginning of the project. These are quantifiable goals measured in terms of cost, time and scope of the project. One Project Manager (PM) stated:

> During the course of a project, we have many small successes when reaching milestones. It is important to set realistic partial goals.

Soft criteria, such as stakeholder satisfaction and system quality, are also measured at several stages and agreed upon by clients by signing progress reports. The Sunset Review Report, for example, is created after GoLive as an evaluation of the entire project, performed by the client and consultancy together. The GoLive report is important because the perspectives expressed contribute to forming joint understanding of success. One PM stated:

> The evaluation together with the customer may change the perspective with which the client evaluates the project. In other words, you may change the experience that the client perceives to have had.

The PM referred to the formula that measures customer satisfaction: Actual experience (AE) must be greater than or equal to expectations (E) in order to achieve satisfaction (S) (i.e., S if $AE \geq E$). This means that in order to have satisfied customers, Merit must focus on improving the actual experience of the client, as well as on ensuring that the client has realistic expectations.

When evaluating projects, Merit uses a business intelligence tool to follow up on budget, time and scope, together with weekly reports containing scorecards for all processes (scope, resources, progress, costs), project KPIs (actual versus plan), status of solution delivery, activities and next steps, decisions made and to be made, project risk (including risk analysis), change of management status and resource availability.

This form of project status reporting allows all parties to have control over important project metrics. The reports are discussed and agreed upon together with the client's project manager.

4.1   Important roles at Merit

- Project Manager (PM): assigned to the project by the Project Executive to manage implementation. The PM is responsible for the project scope, the definition of solution scope and the installation at the right time, at the right level of quality and the lowest possible cost.

- Solutions Manager (SM): responsible for continuously reviewing, monitoring and coordinating the total business solution to ensure that the delivered solution (and scope) corresponds to the content in the solution scope.

- Business Consultants (BC): assigned to the project by Merit management and work under the direction of the Project Manager. BC competencies are flexibility, responsibility, discretion, communication skills, emotional intelligence and social skills, as well as T-skills, covering both depth and width in knowledge. The BC is responsible for providing a working solution according to the content in the solution description.

5   Investigation of CSFs for a consultancy

The aim of this research is identify CSFs for the consultancy. This goal was achieved by asking the interviewees whether the CSFs identified by previous research on implementation of ERP are relevant for the consultancy, and whether they would like to add additional CSFs.

5.1   Top management support

The support of top management is indeed important from a consultancy's perspective. It is important to have support within Merit. One PM stated:

> With the support of top management at Merit, the project is guaranteed resources and best project team members.

The support and commitment of top management at the client company further ensures allocation of the best personnel and resources needed to achieve the aims of the project, making it easier for Merit to work with the client and achieve the aims set for the project.

5.2   Project management

The PM, the project team and the tools applied to conduct the project are critical for all Merit projects, including ERP implementation. The interviews indicated that the PM in particular is critical for project success. The interviewees also stated that the tools available to the project team are critical in achieving the aims set for the project. Merit has several tools to follow up and support projects, but they are not used to the same extent in all projects. One PM stated:

> Using a common information-sharing platform together with the customer is important. This platform should also have information about activities. One platform ensures that all project members know where to retrieve information necessary and important for them.

Most interviewees mentioned document control as critical for project success. For example, one PM stated:

> Using the right documents and choosing the correct level of detail for each project is very important. The definition of scope of work and its availability to all project team members is always important. Not all documents are relevant for all projects; often simple documents are best.

Simplicity seems to be important for many Merit employees; another PM stated:

> It is better to have simple documents that are easy to update and understand. If it is, then documents are used frequently. Templates should be the same for all projects; this helps project team members to relate to them.

Merit Steps provides document templates for all phases of a project. One PM stated:

> PMO (Project Management Office) ensures that correct and updated templates are available to project managers for the different phases in Merit Steps.

5.3   ERP system and ERP consultants

The CSFs in this category for the client are selection of ERP, selection and use of consultants, and implementation strategy and timeframe. For Merit, the ERP and modifications to it are important for successful implementation. One PM stated, "the functionalities of the ERP are pre-defined."

The interviewees mentioned the effective management of modifications, changes and customisations as a CSF for projects and implementation. The selection and use of the right consultants for the project was also highlighted as important by interviewees. However, this component was not defined as critical by the interview partners.

5.4   IT environment

At Merit, there are a handful of technical consultants that work with projects. One BC stated:

> The same people work in all projects. It is easy for them to ensure that things are done in a standardised manner.

In addition, one PM stated:

> The early installation of the ERP software and the set-up of the ERP environment are critical for the project.

Another PM stated that the use of TestBase was critical. TestBase is a tool to help structure business cases, also called test scenarios, which the client develops themselves. Test-Base forces the client to analyse their business processes, describe them and document how the ERP supports them at the same time.

5.5   Training and education

Merit does not take responsibility for the training and education of end-users. The commercial agreements extend as far as super-user training, usually not including user manuals. This means that the client must take responsibility for training and education themselves. At Merit, there are different opinions concerning this topic. Some interviewees stated:

> Training and education is the responsibility of the customer. They need to own this process themselves.

Meanwhile, other interviewees argued:

> We do not communicate to the customer the importance of training and how much time they will need to spend on it. We need to take more responsibility for training and need to be more involved. We should also revisit the customer shortly after GoLive and make sure that end-user training has been conducted sufficiently, as well as ensuring that the ERP is operated correctly.

Customers who do not feel that they can handle the system because training and educa-tion has not been carried out appropriately are not satisfied; thus, the ERP implemen-tation fails. This conclusion is in line with what another Merit employee said, "the ERP is only as good as the people who operate it".

5.6   Maintenance and support

During the interviews, it became obvious that employees at Merit were well aware of the importance of M&S. One PM stated:

> Maintenance and support are an important part of ERP implementation. This phase is the continuous improvement phase. It lasts until the system is upgraded or the customer relationship is terminated.

The Operations Solutions Manager clarified that "maintenance and support is part of the product life cycle".

This fact led to the recent revision of Merit Steps. Merit Steps today includes a fourth phase after GoLive—M&S. One senior manager stated that "to include the operate phase was done so the methodology better fits the way we work".

The interviews touched upon some details about M&S, including the recording of issues in a common platform accessible to both client and Merit. This platform is important in order to manage support and maintenance effectively. Merit must agree upon which tools to use to handle issues early in the project. One PM explained:

> It is important to differentiate between issues that have to be resolved before GoLive and issues that can be resolved after GoLive. It is important to record all issues and decide upon how and when to resolve them.

Issues that do not have to be resolved before GoLive are usually managed during the support and maintenance phase, which is often an area of conflict between the client and Merit:

> The customer is interested in solving the majority of issues during the project; in this phase, the customer pays lower rates for the consultants than during [the] support and maintenance phase. Merit is interested in resolving all issues critical for GoLive. Other issues are often moved to Merit Support.

Merit has a database for recording of issues, called Merit Support. As one PM stated: "[The] Merit Portal and Merit Support increase user satisfaction."

This statement implies that the resolution of issues in a structured manner increases client satisfaction. Satisfied stakeholders are a key success criterion for Merit.

5.7   Business process reengineering and change management

The impression of BPR during interviews was that BPR was the client's responsibility. One senior manager at Merit said:

> We usually don't have a say in how the customer should manage their business processes; however, we may provide suggestions.

The CEO at Merit explained:

> The industry suites provided should cover as many of the processes of the customers as possible. Customisations, modifications and changes to the core of the system reduce the quality of the system and increase total cost of ownership (TOC). Therefore, we sometimes recommend [to] the customer to change their processes. The customer's processes should be aligned with best practice.

Change management has two different perceptions within Merit. On the one hand, change management is supposed to manage deviations from the scope by managing change requests. On the other hand, change management has to do with people and how they react to change, also called organisational change management (OCM). All interviewees agreed that effective management of change requests was critical to project success. One senior consultant explained:

> Defining the scope is the first important step in change management. You must differ between issues that must be handled during the course of the project, and issues that are to be seen as improvement propositions. Issues that need to be handled during the course of the project, but are not part of the scope must be treated as change requests. If the change request is significant, the consultant responsible for the process describes it in detail. Then the change request is analysed economically, against time and budget. It is the steering committee that finalises the change request.

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Economically, the effective handling of change requests is significant for Merit. The management of OCM caused diverse reactions among interviewees. On the one hand, interviewees suggested:

> It is the customer's responsibility to handle organisational change within their organisation. Merit should not be involved in these processes.

On the other hand, interviewees indicated:

> Organisational change management is important for IT projects to succeed. Merit can help to ensure that the IT system is not perceived in a negative way by the client.

One consultant stated:

> As a consultant, you are in contact with many different kinds of people. It is important to know how you handle different people and how you manage their attitudes towards change.

5.8   Client's maturity

The interviewees were asked whether Merit considers the customer's maturity in their projects and how they think that client maturity can influence project success. One PM stated:

> Customers must be aware of how much time they will have to use and be prepared to do this. It is important for us that customers deliver their share of the project at the agreed-upon times.

Lack of dedication, resources and available personnel is a factor that has negative influence on the project. One PM stated: "Merit needs to set requirements for the customer and follow up on them."

Some customers do not lack dedication, resources or available personnel; however, they may lack competence and capability. This is not a problem as long as project team members are open and Merit employees compensate for this gap. However, one consultant stated:

> We tend to over-evaluate our customer's capabilities. We should follow-up more closely and assure us of the quality of their work.

In other cases, customers are simply not mature enough to implement an ERP. One PM stated:

> Usually, I ask the customer to present to me business process documentation. This is usually a good indicator of the customers maturity and awareness of business processes.

One senior manager was very clear about the importance of considering the customer's maturity:

> Make a checklist of things that the customer has to do before the ERP implementation project may start.

5.9   Management of client expectations

Merit defines that project success does not only depend on delivering on-time and on-budget, but also on the following formula:

> Actual experience (AE) must be greater than or equal to expectations (E), in order to achieve satisfaction (S), S if $AE \geq E$.

Therefore, by effectively managing the client's expectations, Merit can achieve stakeholder satisfaction. Stakeholders are not restricted to the client. In ERP implementation, Merit's internal stakeholders are as important as external stakeholders. All stakeholders hold expectations towards the project, which must be managed effectively in order to achieve satisfaction. One PM stated:

> Management of client expectations is about setting appropriate expectations and delivering just a little above these. To deliver above the expectations of the customer leads to customer satisfaction.

The PM further explained:

> Sometimes, even if we deliver what is expected, it does not necessarily result in customer satisfaction. And different stakeholders have different views at different points of time.

The same is true for Merit internal stakeholders. As one experienced consultant and PM stated,

> You have to manage demands from many stakeholders. It is not possible to please everyone; you have to prioritise.

The terms 'prioritising and re-prioritising' were employed frequently in the interviews. One PM explained in detail how he felt prioritising was critical to project success:

> Classic IT projects start with talking to top management at the customer and asking: Why do you want to do this? What do you want to achieve with this? Who is going to pay for this? Based on these answers, you define the scope and prioritise. You prioritise what has to be improved and draw a clear line how far you want to go. Customers need to understand that they cannot have everything.

Sales personnel and account managers at Merit have an important role in defining and influencing the expectations of the customer. One PM stated:

> Sales tend to overestimate what the customer can expect from an ERP. Salespeople want to sell the product. It is therefore important to include both project managers and solutions managers early in the selling phase.

Management of client expectations is important on many levels. It is a means to achieve success because satisfaction is a metric used to assess projects.

6   Discussion

6.1   Top management support

Top management support refers to the need for top management commitment and support throughout the entire project. This factor is also important from a consultancy's perspective, as it ensures allocation of best business personnel and resources needed

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to achieve the aims of the project. However, our interview findings do not suggest that top management support is of high importance for client satisfaction. Thus, we conclude that it is not a CSF for the consultancy.

6.2 Project management of consultancy

The embeded complexity of ERP projects and the high risk of failure requires the application of formal tools, techniques and methodologies, such as project management methodologies, towards project success (Ngai et al. 2008). Rahnavard and Bozorgkhou (2014) identified key success factors for implementing ERP using a questionnaire among managers, professionals and experts. The researchers identified project management, user-friendliness, satisfaction of user needs, and management of organisational changes as the most critical CSFs. Ehie and Madsen (2005) and Ngai et al. (2008) also observed that project management has always been one of the major CSFs for successful implementation of ERP. Crawford (2005) further affirmed that project management competence leads to project performance, which finally results in improved organisational performance. The PM, the project team and the tools applied to complete the project are critical for all Merit projects and ERP implementations. Indeed, the interviews demonstrated that the PM is especially critical for project success. Based on these findings, we conclude that project management is a CSF for the consultancy.

6.3 ERP system and ERP consultants

The selection of ERP system and ERP consultants is important for clients, but less important for the consultancy. Therefore, it is not included as a CSF for the consultancy.

6.4 IT environment

The IT environment is the work involved in delivering IT infrastructure to support a solution. Merit Steps includes all document templates and tools to support the above-mentioned workflows. Document templates are collected on an information-sharing platform called SharePoint. Ozorhon and Cinar (2015) investigated the CSFs of ERP implementation in Turkish contruction industries. They identified top management support, effectiveness of the project leader and cooperation between team members as the most significant factors. Kim et al. (2016) similarly conducted a survey of employees at the Texas Department of Transportation to identify the key strategies in implementation, which they found to include top management and unique makeup

of the implementation team. Organisational culture expedites (or impedes) the integration of individual learning with organisational learning by affecting the organisation's ability to learn, share information, and make decisions (Kilmann et al. 1986). We therefore conclude that IT environment is a CSF for the consultancy firm.

6.5 Training and education

Training and education refers to the continuous transfer of both tacit and explicit knowledge on the logic, concept, processes and functions of the ERP (Ram et al. 2013). User education and training aids the transfer of explicit and tacit knowledge on the routines, practices and functions of ERP (Ram et al. 2013). However, Merit does not take responsibility for the training and education of end-users. Their commercial agreements extend as far as super-user training, which usually does not include user manuals. As such, the client must take responsibility for training and education themselves. Effective training is significant to providing users with the required skills and tools to use an ERP in an efficient manner in their operations (Stratman and Roth 2002, p.612). Indeed, a number of studies have found that training and education is one of the most important CSFs for ERP implementation success (Dezdar and Sulaiman 2009; Snider et al. 2009). In one study, training and education was observed to be positively associated with user satisfaction, thus leading to improved organisational performance (Dezdar and Ainin 2011). Liu (2011) also concluded that a relevant training and education program can assist organisations in ensuring effective knowledge management, which creates a positive influence on the management performance of organisations in terms of business and financial performance and organisational effectiveness. Furthermore, Sundal (2012) found in interviews with consultancies in the Norwegian market that one of the major challenges was that clients did not dedicate enough time, and overestimated their abilities for ERP implementation. Therefore, we conclude that training and education is a CSF for the consultancy firm.

6.6 Maintenance and support

An ERP implementation project formally ends with GoLive. However, implementation is never truly complete, as all systems must be maintained, supported and eventually upgraded (Somers and Nelson 2001)2001</secondary-title></titles><periodical><full-title>Proceedings of the 34th Hawaii International Conference on System Sciences,   2001</full-title></periodical><dates><year>2001</year></dates><urls></urls></record></Cite></EndNote>. Law et al. (2010) underpinned the importance of

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M&S by presenting a framework which demonstrates that the M&S outcome, together with the implementation outcome, is critical to overall ERP success. They argued that M&S are important in the ERP lifecycle and must be handled properly for ERP implementation to yield benefits to the client. The interviews addressed several issues related to M&S, including the recording of issues in a common platform that is accessible to both the client and Merit. This platform is important in effectively managing support and maintenance. The interviews clearly revealed that employees at Merit were well aware of the importance of M&S. As such, Merit must agree upon which tools to use to handle issues early in the project. We argue that ERP maintenance and support are critical to achieving client satisfaction, and thereby successful ERP implementation. These factors resemble the CSFs for clients, but have a somewhat different meaning for the ERP consultancy. By adding 'of consultancy', this distinction is made explicit. Satisfied stakeholders are a key success criteria for Merit; thus, M&S is a CSF in ERP implementation from the consultancy's perspective.

6.7   Business process reengineering and change management

Rahnavard and Bozorgkhou (2014) found in their study that management of organisational changes is a key success factor for implementing ERP. Motwani et al. (2005) studied CSFs for successful implementation in four organisations, and found that an implementation process supported by successful change management has a positive impact on successful implementation. Different types of IT system products may require different approaches towards implementation and change management (Ram et al., 2013). Successful business process changes can be significant facilitators for achieving implementation project success and post-implementation performance gains (Guha et al. 1997). The impression of BPR among interviewees was that BPR was the client's responsibility. One senior manager at Merit said, "We usually don't have a say in how the customer should manage their business processes; however, we may provide suggestions." We did not find enough evidence in the interviews to define BPR as a CSF from the consultancy's perspective.

Effective organisational change management reduces the risk of negative reactions towards the ERP within the client company. As a result, the stakeholders are more satisfied, and the implementation is successful. This notion is also supported by Sundal (2012), who found in her study of the Norwegian market that three out of three consultancies interviewed used a plan for change management that they developed. Thus, we included change management as a CSF for the consultancy.

6.8   Client's maturity

Sammon and Adam (2010) argued that many of the problems experienced in a later phase of ERP implementation originate during the preparation phase. Sammon and Adam (2010) empirically related the principles of preparedness to the outcome of ERP implementation in four case firms in the post-implementation phase. In summary, they found that the following five principles of preparedness were lacking in the majority of case firms and thereby causing implementation problems:

- Organisational goals that lead to success in the business are defined.

- BPR is carried out ahead of implementation.

- Implementation methodology is worked on with proven partners and consultants.

- Best business personnel are available for the project on a full-time basis.

- Plan for organisational approach to training and education

The principles of preparedness, or client's maturity, also relate to Chang et al. (2013), who argued that clients need to evaluate their own skills prior to ERP implementation. A low score in client's ability should be compensated by contracting consultants. In short, the gap between available ability and required ability should be filled by hiring consultants. The greater the gap, the greater is the need for consultants. This notion was also affirmed by Motiwalla and Thompson (2012). Client maturity also seems to be closely related to organizational readiness. Its importance is emphasized by Jagoda and Samaranayake (2017) who found that organizational readiness in addition to being critical cannot be addressed within implementation phases since the readiness falls outside an implementation cycle. Ram et al. (2015) found a positive correlation between organizational readiness and the CSFs project management, business process re-engineering, training and education and system integration for client organizations. Thus, although client's maturity is not directly mentioned as a CSF in the existing literature, we find it important to include, as it helps to understand the complexity of ERP implementation. The client's maturity is critical for Merit, because the client too must deliver their share of the implementation. The client must be aware of and prepared to complete a considerable amount of work. The client's capabilities, competence and knowledge are also critical for Merit. We conclude that client maturity is a CSF for the consultancy firm.

6.9   Management of client expectations

The management of client expectations is defined as a CSF because of the contributions of this study. As noted in previous sections, customer satisfaction is a success criterion for Merit. In order to achieve customer satisfaction, Merit must ensure that the customer both maintains realistic expectations towards the implementation, and believes that these expectations have been met or exceeded. As customer satisfaction is relative to time and multidimensional in terms of different stakeholders, expectations must be managed in a structured way. As such, we conclude that management of expectations is a CSF for the consultancy firm.

6.10   Summary of discussion

Researchers have performed many studies identifying CSFs related to the success of ERP with regard to implementation and adoption by user organisations (Nagpal et al., 2015). Nevertheless, as mentioned in the objectives of this study, there is limited literature concerning CSF for the ERP consultancy itself. This study observes two new CSFs defined by Merit employees that have not been proposed in earlier studies: client maturity and management of expectations.

The client's maturity is critical for consultancies such as Merit, because the client too must deliver their share of the implementation. The client must be aware of and pre-pared to complete a considerable amount of work. The client's capabilities, competence and knowledge are also critical. In previous sections, we defined that the customer's sat-isfaction is a major success criterion for Merit. The management of client expectations is defined as a CSF by this research. The client satisfaction formula, S if AE ≥ E, used by the consultancy indicates that by effectively managing the client's expectations, Merit can achieve client satisfaction. Merit must ensure that the customer has realistic expec-tations towards implementation, and that the customer believes that these expectations have been met or exceeded. Because the customer's satisfaction is relative to time and multidimensional in terms of different stakeholders, these expectations must be man-aged in a structured manner. From the perspective of the consultancy, the expectations should be minimised, while the actual experiences should be maximised, while still fulfilling the conditions agreed upon.

CSFs that are relevant for the client, but not for Merit, include top management support, BPR and ERP system and ERP consultants. ERP applications include best business practices; however, these generic processes may not be compatible with the business process and practices of the adopting organisations (Ram et al., 2013). In this context, organisations may be required to improve or reengineer their business pro-

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cesses to align them with an ERP business model (Lee et al. 2003). Ram et al. (2013) argued that BPR is a strategy to create a useful platform to ease successful ERP implementation. Organisations perform BPR to revamp processes, to exclude ineffective and non-value-adding operations and to align their business practices with industry best practices (Shang and Seddon 2007). Therefore, BPR is a CSF for clients, but not for consulting organisations and is thus not included in table 3.

Notes on cloud ERP

The ongoing convergence towards cloud ERP solutions will affect ERP consultancies, especially for multi-tenant cloud solutions enforcing a greater degree of standardization of the system. Interesting aspects for consultanices include: (1) to what extent such standardization results in a change to more business process consulting and less technical consulting, (2) what mechanisms are required by consultancies to guide clients to

CSF	Client	ERP Consultancy
Top Management Support	X	
Project Management	X	X
ERP system and ERP Consultants	X	
IT Environment	X	X
Training and Education	X	X
Business Process Reengineering	X	
Change Management	X	X
Maintenance and Support	X	X
Client's Maturity		X
Management of Client Expectations		X

Table 3. CSFs investigated and their relevance for the client and ERP consultancy

adopt to more rigid cloud based ERP systems, (3) what will be the consultancies role in handling an increased need for add-on systems supporting the client specific solutions and their integration with cloud ERP solutions, and (4) what can consultancies do to support the increased complexities from more diverse and dynamic business environments.

7 Conclusions, limitations and future research

For any organisation, ERP implementation is a major undertaking that involves many internal and external factors. It requires an organisation to implement the ERP in an efficient manner, a project that the organisation typically has previously completed, by utilising extensive resources such as money, manpower and time. These challenges lead organisations to employ ERP consultants, who are experienced in implementing new ERPs in diverse organisations. The use of consultants is necessary, especially when an organisation has low internal capabilities, competence and knowledge. The consultancy's role is to assist the client to implement the ERP in the best manner. The consultancy fills the gap between existing and necessary knowledge of the client.

In order to achieve customer satisfaction, a consultancy must ensure that the customer has realistic expectations towards the implementation, and believes that these expectations have been met or exceeded. Because the customer's satisfaction is relative to time and multi-dimensional in terms of different stakeholders, these expectations must be managed in a structured manner throughout the entire implementation process. CSFs are used to guide managerial decisions both at the client organisation and ERP consultancy. This study found that clients and consultancies share common CSFs, such as project management, IT environment, training and education, change management, and maintenance and support. Two additional CSFs—client's maturity and management of client expectations –are unique for ERP consultancies. This study contributes important insights for clients to understand how to best leverage ERP consultants, as they are critical for successful implementation of ERP. It also contributes to the operational knowledge of ERP consultancies through providing management decision support to navigate the complex task of consulting clients in implementing ERPs.

Several interview partners stated that CSFs vary for each project, and that different industries have different CSFs. In general, Merit focuses on CSFs in projects that range from complete ERP-system implementation projects, to very specific projects like the "integration of a warehouse management system (WMS)" or the "aligning of the procurement process with best practice".

The findings in this study can also be used as input in a discussion on what type of competencies are needed and what topics educational institutions should include in their offerings in information systems. As future research, it will be interesting to conduct similar studies in other consultancies handling different domains and geographical locations to compare the results.

Notes

1. We use 'consultants' to refer to ERP consultants, 'consultancy' to refer to the ERP Consultancy Company, 'client' to refer to customer organisations, and 'ERP' for ERP system.

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