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**CHANGE MANAGEMENT IN INFORMATION  
SYSTEMS: VIEWPOINTS FROM A PROFESSIONAL  
SERVICES FIRM**



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## ABSTRACT

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Change management is a crucial part of organizations' sustaining and refining activities in an ever-changing world. In the modern day, this fact is especially emphasized in information system projects, where increasing digitalization of information and services is the trend. In this thesis, additional knowledge was gathered via qualitative interviews with chosen change management and information systems specialists, on what change management activities are important from information systems viewpoint. The collected information was used to gather critical success factors (CSF) for change management in information systems, which were compared to the current understanding in the literature. This study found many of the currently recognized CSFs in information systems change management to be relevant, and revealed some additional CSFs and areas of interest in IS change management. In addition, utilization of change management models in information systems change management was noticed to be non-standard, with many organizations using ad hoc methods to manage a change endeavor.

Keywords: change management, change management model, critical success factor, change management in information systems

## TIIVISTELMÄ

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Muutoshallinta tietojärjestelmätieteissä: näkökulmia asiantuntijaorganisaatiosta  
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Muutosjohtaminen on organisaatioille tärkeä tehokkuutta ylläpitävä ja toimintoja kehittävä osa-alue alati muuttuvassa maailmassa. Nykypäivänä tämä korostuu etenkin tietojärjestelmäprojekteissa tiedon ja toimintojen siirtyessä yhä enenevässä määrin sähköisiksi kiihtyvän digitalisaation vuoksi. Tässä tutkimuksessa pyrittiin luomaan lisätietoa onnistumisen avaintekijöistä liittyen muutoshallintaan tietojärjestelmätieteissä. Tutkimustapana käytettiin laadullista haastattelututkimusta, jossa haastateltiin valikoituja muutoshallinta- ja tietojärjestelmäasiantuntijoita. Kerättyä tietoa käytettiin muodostamaan onnistumisen avaintekijöitä muutoshallinnassa tietojärjestelmätieteissä, joita verrattiin jo kirjallisuudessa tunnistettuihin onnistumisen avaintekijöihin. Tässä tutkimuksessa havaittiin usean jo tunnistetun onnistumisen avaintekijän olevan olennaisia, minkä lisäksi pystyttiin tunnistamaan uusia onnistumisen avaintekijöitä ja muita muutoshallinnan osa-alueita, joihin on tärkeä panostaa jotta tietojärjestelmiin liittyvä muutoshallinta on kokonaisuudessaan onnistunut. Lisäksi havaittiin, että organisaatiot eivät hyödynnä muutoshallinnan malleja säännöllisellä tavalla, vaan jonkinlainen hallintamalli luodaan usein muutoskohtaisesti.

Asiasanat: muutoshallinta, muutoshallintamalli, onnistumisen avaintekijä, muutoshallinta tietojärjestelmätieteissä

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# 1 INTRODUCTION

In the ongoing digital age, for organizations to be successful and thrive among their numerous competitors, it is crucial to stay on the verge of change. It is easy to see change just as a means to survive, but rather than just staying up with the competition, or attempting to comply with the general regulatory environment, change should be seen as an opportunity as well. As stated by Russell, O'Raghallaigh, O'Reilly and Hayes (2018), the art and science of successful digital transformation lies in the organization's ability to implement change at a pace, across people, processes, and platforms (4Ps). However, despite the recognized need for change, many change projects end up failing. According to a report by Balogun and Hailey (2008), there is a failure rate of 70 per cent among all change programs initiated. The reasons behind such high failure rates are of great interest, also in the field of information systems, where a failure to comply with regulations through change projects can implicate massive fines. For example, with the General Data Protection Regulation (GDPR), maximum fines can go up to €20 million or 4% of the business's total annual worldwide turnover (Data protection in the EU, 2017). In addition, in a study by Hughes, Rana and Simintiras (2017), it is made evident that information system projects still have high failure rates in the current day. This can implicate the difficulty of IS projects, but also the lack of fundamental understanding in the change management landscape.

Change management is a field that has been extensively researched. When considering change management in organizations alone, the total of articles rises beyond one million (Van de Ven & Poole, 1995). In addition, a large array of books and guides on how to conduct change (especially in organizations) have been released. Examples include "The theory and practice of change management" By John Hayes (2018), and "Making sense of change management: A complete guide to the models, tools and techniques of organizational change" by Esther Cameron and Mike Green (2015).

There is little doubt about the importance of an organization's ability to identify where it is, where it needs to be in the future, and how to manage the changes required to get there (Todnem By, 2005). Change management is a one

way for organizations to consistently deliver on the previous matters. It is noticeable however, that there is little detailed study on the matter of change management from an information systems perspective. Hughes et al. (2017) found in their paper about IS project failure, that IS failure literature referencing change management fails to give details on whether the projects used any change or project methodology, or whether the organizations involved had any change management maturity. Also, Ziemba and Oblak (2015) state that change management continues to have a relatively small representation in project management literature, a stream of literature which would especially benefit running successful IS projects. Additionally, most of the studies on critical success factors (CSFs) around change management have not taken the information systems perspective into account (Ziemba & Oblak, 2015).

This study provides an attempt to rectify the recognized gap in identifying critical success factors in change management from an information systems perspective. Five change management specialists from an international professional services firm are interviewed in order to gather information on the critical success factors surrounding information systems change management. The chosen interviewees have a strong background in change projects involving information systems. They also have significant in information security and change management.

The goal for this study is to compare the currently known critical success factors in information systems change management literature to the current understanding that professionals of the subject have in the field. The results and their significance for information systems change management will be discussed in detail. The end result is an updated view on the CSFs in IS context and added study on a scarcely examined research area. The main research question study is presented below:

- **What are the critical success factors for change management in information systems context?**

The sub-question used to decipher the answer is the following:

- **How do the critical success factors recognized in this study differ from the critical success factors currently recognized in the literature?**

The remainder of this thesis is structured as follows. Chapters two and three will form the literature review of the study. First of these consists of defining the term change management, and its observed effects on information systems projects. In chapter three, a look will be taken on most prominent change management models. In addition, a look will be taken on current knowledge about effective change management. Fourth chapter will discuss and synthesize the findings of the literature review. The chapters following the literature review are reserved for research methodology, study findings and discussion. The study will finish with conclusion and the list of used references.



## 2 CHANGE MANAGEMENT IN INFORMATION SYSTEMS SCIENCE

In this chapter, the term change management, and later critical success factor (CSF), will be defined. In order to further motivate the usefulness of change management processes in information system projects, some of the observed benefits of change management constructs are also explored. Furthermore, currently recognized good practices in information systems change management will be scrutinized from the current literature. These often come in the form of critical success factors (CSFs), which are the most crucial elements of a successful change effort.

### 2.1 Change management

Change management has been recognized as a matter of difficulty for a notoriously long time. As explained by Gill (2002), there is written evidence of this already from the sixteenth century. It was explored in Machiavelli's book "The Prince", released in 1532, how difficult and risky it is to implement change, especially from the perspective of change resistance, and that lack of commitment to change is a common problem. Machiavelli's viewpoint summarizes well the importance of understanding what change management is about, as it is imperative to have this knowledge in order to fight the difficulties of change effectively. There are numerous definitions that are used for change management, and they will be explored next.

When exploring the definition of change management, Jansson (2008) notes that the term itself is difficult to define, as it is actually an umbrella notion with a wide range of uses. Also, as stated by Bamford and Daniel (2005), there is no universally accepted definition of change management, and the key approaches about change management are often disagreed upon. Disparities on the usage of the term can lead to confusion between people and organization, as it is possible that the parties are using the same term while talking about entire-

ly different concepts. Furthermore, it is evident that some of the used definitions are self-referential and unsophisticated, thus being of little use to practitioners and researchers due to lack of clarification, elaboration, or explanation about the term and its use (Nilakan & Ramnarayann, 2006; Kang, 2015). Luckily, there are also more in-depth definitions for change management, which better support the purpose of this paper. For example, according to Moran and Brightman (2001), change management has been defined as “the process of continually renewing an organization’s direction, structure and capabilities to serve the ever-changing needs of external and internal customers”. Furthermore, Burnes (2004) explains that change is an ever-present feature of organizational life, both at an operational and strategic level. Some agreement on the definition of change management is found between Beekman, Chenhall and Euske (2007), Nutt (1992), and Tan and Tan (2005), who all see change management as a process that helps organizations in the implementation of an appropriately planned change, as referred to by Ziemba and Oblak (2015). It is further elaborated by Al-Mudimigh, Zairi and Al-Mashari (2001), that change management is understood in the context of information system projects as activities, processes, and methodologies that support employee understanding and organizational aspects during IS projects. Moving towards solving the problem of wide number of conflicting definitions, and in order to avoid confusion with the use of the term, Kang (2015) suggests that the term change management should be divided into macro and micro change management. Macro change management considers the more strategic approach and overall steps of change management, while micro change management is more about the details and guidelines to conduct specific tasks. He further elaborates by explaining that books and articles exist to explain both macro and micro change management, but the terms are still used as synonyms, although they represent significantly different aspects of the entirety, that is change management. There is yet another interpretation for definition of change management by Nickols (2004), in which he states that there are three constituents which change management consists of. These three elements are the task of managing change, a body of knowledge, and an area of practical applications.

The large number of interpretations for the definition of change management suggests that there is currently no universally accepted definition for the term, but rather a collection of definitions. These can have roughly the same meaning, but also fundamental differences in their interpretation depending on the context. For the purposes of this paper, the information systems context definition for change management as activities, processes and methodologies that support employee understanding and efforts on organizational level in IS projects (Al-Mudimigh, Zairi & Al-Mashari, 2001) is seen as appropriate. It supports the viewpoint of this paper well in gathering insight into modern IS change management.

## **2.2 Observed benefits of change management in information systems context**

Current literature holds evidence of change management being a beneficial element of an IS project. For example, Thurow (1991) states that change management is a core element for effective IS operations with emphasizing the need for organizations to look into change management for success in IS. Also, in a study by Ziemba and Oblak (2015), critical success factors were identified for change management in information system projects and showcases how applying change management critical success factors in IS projects can be beneficial to a project at large. Two different IS projects in Poland based public organizations were compared. In the Project A, change management principles were poorly taken care of, while in Project B these were taken much more seriously, with change management being applied in a methodologically correct manner. The comparison is shown in table 1.

Table 1: A comparison of change management effects (Ziembra &amp; Obłąk, 2015, p. 56)

Change management CSFs	Project A		Project B	
1. Top management support	-	Top management not fully aware of the complexity of IT project. Steering committee formed – but meets infrequently. Support of top management not visible.	✓	Top management fully aware of the complexity of IT project. Steering committee meets regularly. Visible top management support.
2. Recognize the change	-	Need for change has not been established.	✓	Need for change has been established.
3. Shared vision for change	-	No vision of change	✓	Vision of change regularly promoted on the meeting with employees at various levels of the organization.
4. Planning a project as a change	-	Project was not planned as a change process.	-	Project was not planned as a change process, however there was awareness of the need for change.
5. Managerial activity	✓	Managers associated with the change process were involved.	✓	Managers associated with the change process were involved.
6. Effective communication	-	Communication was not sufficient. End-users were not involved in the change process. End-users were not informed about the change.	✓	Communication was sufficient. End-users were involved in the change process. End-users were informed about the change.
7. Organization's readiness to deal change	-	Change was not clarified to employees. Dedicated user teams were not created to define and implement IS.	✓	Change was clarified to employees. Dedicated user teams were created to define and implement IS.
8. Employees' training	✓	Group of employees has been trained in the use of IS.	✓	Employees were trained in project management methodology. Group of employees has been trained in the use of IS.
9. Employees' involvement	-	Employees were not involved in the change process. Very low level of user acceptance.	✓	Employees were trained in the change process. Group of interest was created and employees were involved in requirement gathering.

(continues)

Table 1 (continues)

10. Employees' satisfaction	-	Very low level of user acceptance User dissatisfaction manifested.	✓	Users start to see value in integrated systems.
11. Information flow	-	There was no information source neither were the participants of the project informed, nor information was provided outside about the project performance.	✓	Information source was created. Document repository was created. Updates about the project were sent to end-users.
12. Performance measurement	-	Performance was not measured.	✓	Performance was measured, and progress of the project was indicated.
<b>Counts of yes</b>		<b>2/12 = 17%</b>		<b>11/12 = 92%</b>
<b>Results</b>		<ul style="list-style-type: none"> <li>• Project was accomplished with a significant delay.</li> <li>• IS has been implemented, but after 12 months passing from the implementation it is not used at its full capacity by the end-users.</li> </ul>		<ul style="list-style-type: none"> <li>• Project was accomplished on schedule.</li> <li>• IS has been implemented and it is used at its full capacity by the end-users.</li> </ul>

As Ziembra and Oblak (2015) demonstrate in table 1, the effects of successful change management in IS projects are plain to see. On the left column are the critical success factors in change management. These are the factors most important for successful change management. It includes entities such as top management support, shared vision for change, effective communication, employee training, information flow, and so on, for a total of 12 critical success factors. Project A managed to only adequately fulfil 2 of the 12 required success factors, while project B succeeded in 11. For Project A, the poorly managed CSFs also reflected to the result of the project, as it was delayed significantly. Also, after 12 months of the implementation, the information system was still not used at its full capacity. For Project B, the information system project was completed on schedule, and the system was effectively used at its full capacity after the conclusion of the project. Although this experiment was only based on Polish public organizations and was limited to only 2 case studies, it clearly demonstrates what kind of effect a lacklustre attitude on change management can have on an IS project.

### **2.3 Critical success factor definition and currently recognized CSFs in information systems context**

For the purpose of following and measuring success in change endeavor, there exists an extensive number of factors and metrics. The most important of these are known as critical success factors (CSFs). The idea behind CSFs was first developed and refined by Bullen and Rockhart (1981). According to them, CSFs are "the limited number of areas in which satisfactory results will ensure successful competitive performance for the individual, department, or organization. Furthermore, Bullen and Rockhart (1981) elaborate that CSFs are the few key areas where things must go right in order to maintain a successful business.

Chow and Cao (2008) express that CSFs in software projects are related to project management techniques or relate to the combination of IT and business perspective, respectively. It is also argued by Bosghossian (2002), that software project related CSFs have various elements to them, the development life cycle, executive management involvement, and strategic-level planning for instance. The critical success factors for IS change management recognized in the current literature are compared against the findings of this paper and updated.

As highlighted in the previous subchapter, it is highly probable that deployment of change management practices in information systems projects leads to increased efficiency and project completion rate. However, the question rises on how to ensure that change management is leveraged properly, and its maximum benefits are reaped? In order to find answers to this question, currently literature on critical success factors and good practices behind information system change management are explored next.

One major theme in information systems change management considers the deployment of ERP systems. Aladwani (2001) explores successful strategies for ERP implementation and recognizes good change management as one of them. Furthermore, there are certain aspects of change management according to Aladwani (2001) that need to be taken into account. For example, those responsible for change management need to recognize the possible causes of change resistance by studying the structure and needs of the end users of the system. This can be achieved via evaluating the attitudes of individual users and influential groups (Aladwani, 1998). Questions such as who are resisting the change, and what are their needs, beliefs and interests need to be addressed (Aladwani, 2001). In short, the question is about recognizing the reasons for change resistance and mitigating them. Another key aspect of change management considers the implementation phase of the new technology. As discussed by Aladwani (2001), awareness, feelings, and adoption strategies should be deployed in order to smooth out the overall change process and minimize change resistance. Awareness strategies include communicating the benefits of the ERP system and the general operations surrounding the new system. Feelings strategies include hands on training and enhancing the usability of the ERP system. Finally, adoption strategies aim to secure the support of opinion leaders and

time the ERP introduction with care, to minimize resistance. All of these strategies require top management commitment and support to succeed (Aladwani, 2001.) As a third point, Aladwani (2001) argues that change management efforts need to be monitored in order to ensure that resistance towards ERP is under control. Monitoring includes a performance measurement system in order to ensure that the business outcomes have been achieved. With the monitoring system in place, actions can be taken accordingly in different phases of the implementation process. As a sum up, Aladwani (2001) argues that in order for an ERP implementation process to be successful, user resistance needs to be studied and mitigated, appropriate strategies and techniques need to be used in ERP introduction, and status of the change management efforts needs to be evaluated.

Finney and Corbett (2007) also scrutinized ERP implementation in their study, which compiles and analyses critical success factors found in the literature. They found out that change management is the most widely cited critical success factor among CSFs in ERP implementation, alongside top management commitment and support.

Ziemba and Oblak (2015) explain that critical success factors in change management have not been much studied from an information systems viewpoint. Instead, study emphasis has been placed on critical success factors for change management in general. Due to this fact, Ziemba and Oblak (2015) attempted to gather what they could from the current literature concentrating on the IS viewpoint. The results are shown on table 2 below.

Table 2: Critical success factors for change management in IS projects (Ziemba & Oblak, 2015, p. 50-51)

<b>CSFs</b>	<b>Definition</b>
1. Top management support	Active and visible support from a management team. Involvement and commitment of senior management. Direct participation of the strategic decision makers in an IS project.
2. Recognize the change	The need for change has to be established. Promote a positive approach to change.
3. Shared vision for change	The vision should be strongly advocated across the organization.
4. Planning a project as a change	Evaluation of the gap between where the organization is now and where it would like to be. Manage entire change process as a project. Prepare a change management plan. Promote change in the organization.
5. Managerial activity	Involvement of managers who are directly associated with the change process.

(continues)

Table 2 (continues)

6. Effective communication	Communicate the change message at all levels throughout the organization.
7. Organization's readiness to deal with the change	Organization needs to be ready to deal with change. Employees need to feel that the organization is ready to deal with change.
8. Employees' training	Clear demonstration how to use IS.
9. Employees' involvement	Belief the employees that the change is important and has impact on the organization's success.
10. Employees' satisfaction	Satisfaction with the final product and its acceptability by employees.
11. Information flow	Having readily available and current data gathered in one place and available to all interested.
12. Performance measurement	Measure of change performance and value it to employees to demonstrate success.

Due to the lack of other sources, the CSFs found by Ziembra and Oblak (2015) will be used as a reference point for this study, as it seems to be the most comprehensive and fitting study about the subject so far. The results of this thesis will be compared against these CSFs and any updates and differences will be discussed.

## 2.4 Poor change management - a key factor for failure in IS implementation projects

Another view on change management and its effects in IS context can be taken when examining the situation where change management is poor or completely lacking. In a relatively recent study by Hughes et al. (2017), an examination is made of the key factors that can result in an IS project failure. Poor change management is examined as one of them. Hughes et al. (2017) refer to Change Management Institute (2013), according to which organizations can increase the probability of successful change significantly by incorporating good change management practices.

Furthermore, the opposite seems to apply as well. With poor change management, such as not being able to implement any change management methodologies, not involving users enough in the change project, insufficient communication of change processes or over-emphasizing the technical aspects of project delivery, can lead to an IS project failure (Gauld, 2007). According to Yeo (2002), failure to manage user resistance and formally manage change, issues are included in the key factors leading to project failure. In addition, Mitev (1996) highlights lack of user engagement and aspects of poor change manage-



ment as key reasons for failure in a French railway project. As a further demonstration of the importance of change management, Momoh, Roy and Shehab (2010) introduce some of the key failure factors for ERP implementation projects in figure 1, where poor change management is found to be one of the leading reasons for project failure.

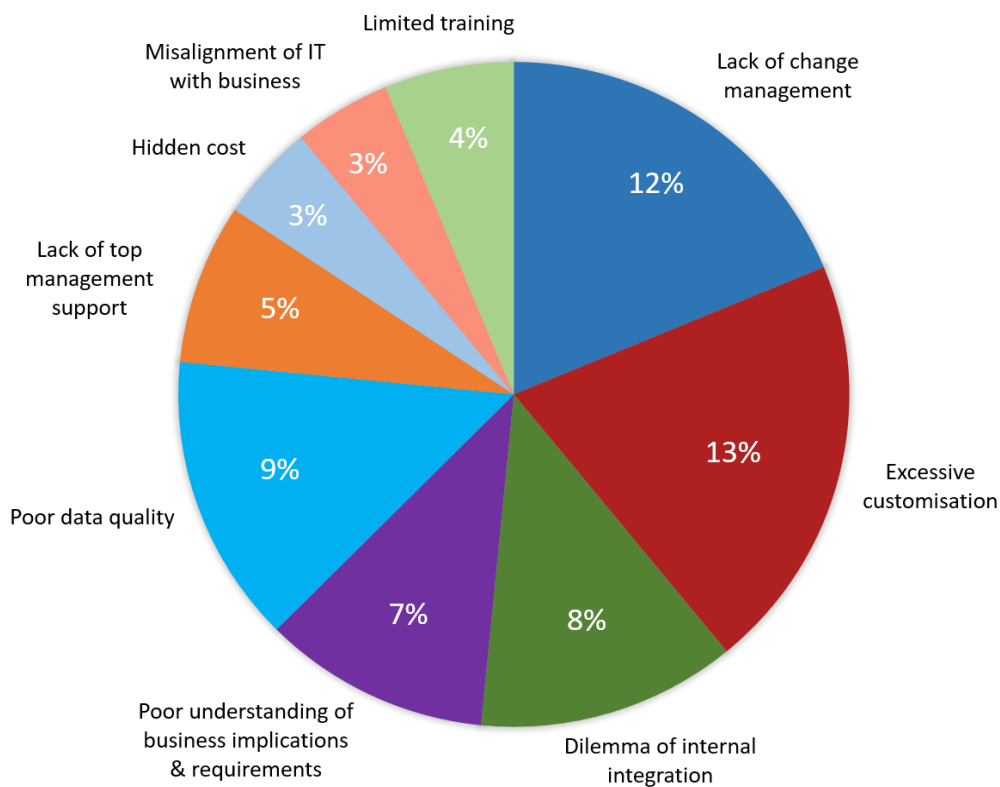


Figure 1: Critical failure factors in ERP implementation (Momoh, Roy & Shehab, 2010, p. 544)

With the reasons here, it is evident that change management cannot be ignored in IS projects. Not only does good change management practices improve probability of success, but a complete lack of change management principles can significantly increase the chance of failure. The interest in the matter increases even still, as according to Hughes et al (2017) there is a gap in change management literature considering IS, as the IS papers that list change management factors usually fail to provide details about the approach and methodologies used. This results in an uncertain assessment in recognizing whether the change management-related failings are cultural, methodological, or a result of leadership and organizational issues (Hughes et al., 2017).

### **3 CHANGE MANAGEMENT MODELS**

Bullock and Batten (1985) narrate, that in order to understand planned change, an understanding must be developed of these consecutive changes, and how the process of movement occurs. To help achieve this understanding, change management models and frameworks have emerged in plenty. Many of the best known models and frameworks have been developed in the 20<sup>th</sup> century, with lesser activity witnessed on the field in the 21<sup>st</sup> century, as can be seen in this part of the literature review.

In this chapter, an overview will be taken on existing change management models and frameworks. These steps are conducted for the purpose of introducing the processes, methodologies and viewpoints that organizations may have utilized in an attempt to make the management of a change efforts easier to follow. A closer look is taken on three studies that compare the most well-known change management models.

#### **3.1 Model comparison by Kang**

Next, a more in-depth look will be taken on change models introduced in three studies that have reviewed the existing change model literature in the 21<sup>st</sup> century. The first of these studies was written by Kang (2015) which is based on an original paper by Seo (2000) but has been revised and translated. Table 3 summarizes the differences between the change models, and a more in-depth look follows. Afterwards, two more of change model summarizing papers will be addressed.

Table 3: Change management models (Seo, 2000). Translated and revised (Kang, 2015, p. 29)

<b>Table 3</b>						
<b>Change management models</b>						
<b>Authors</b>	Lewin (1951)	Lippitt, Watson, Westley and Spalding (1958)	Kolb and Frohman (1970)	Bullock and Batten (1985)	Kotter (1996)	Whetten and Cameron (2005)
<b>Phases</b>	<b>Unfreeze</b>	Need development	Scouting	Exploration	Establishing a sense of urgency	Establishing a climate of positivity
			Entry			
	<b>Change</b>	Change relationship	Diagnosis	Planning	Creating a guiding coalition	Creating readiness for change
					Developing a business strategy	
					Communicating the change	
					Empowering employees for broad-based action	
		Transformation	Action	Action	Generating short-term wins	Articulating a vision of abundance
					Consolidating gains and producing more change	Generating commitment
	<b>Refreeze</b>	Generalization	Evaluation	Integration	Anchoring new approaches in the culture	Institutionalizing the positive change

### 3.1.1 Lewin three-step model

Lewin (1951) introduced a **three-step model** that is according to Brisson-Banks (2010) one of the earliest developed change models. The model consists of the following steps; unfreeze, change, and refreeze. As described by Armstrong (2006), unfreezing has the purpose of altering the present stable equilibrium that supports existing behaviors and attitudes. Change resistance and other internal threats to change need to be taken in to account at this stage. As a second step, change will take place, where new responses are developed. Last step involved refreezing, where the change is stabilized by introducing the new responses into the personalities of those concerned (Armstrong, 2006). Another contribution by Lewin according to Armstrong (2006), is a methodology for analyzing change, known as field force analyses. The basis for these analyses is to make sure that forces driving and restraining the change are well known, the most critical forces are recognized, and steps are taken to make sure that steps are taken to increase the critical driving forces, while simultaneously decreasing the critical restraining forces. Lewin's three step model gives a rather simplistic view of the change process, where the status quo is broken, change is introduced, and new processes are frozen in place. It is notable however, that Lewin is one of the early pioneers of group dynamics (Burnes, 2004), without much source material to work on. Even still, these basic fundamentals of change management are present even in the most recent models to date. It is noted also by Kang (2015), that major models and processes of change management are actually elaborations and accommodations of Lewin's three step model.

### 3.1.2 Lippitt, Watson, Westley, and Spalding model

Next recognized change management model was created by Lippitt, Watson, Westley and Spalding (1958), in which the fundamentals set by Lewin are expanded upon, and new sub steps are introduced. According to Kritsonis (2005), this model focuses more on the role and responsibility of the change agent than on the evolution of the change itself. There is a total of seven steps in this model, first of which is need development. This step includes diagnosis of the problem at hand. Second step is further assessing the change relationships through assessing motivation and capacity for change. As a third step, clarification and/or diagnosis is done, with the purpose of assessing the resources and motivation of the change agent. Fourth step consists of describing alternative routes, i. e. change objects are chosen, and action plans are developed including strategies for the change process. Fifth step of the change process considers transformation, it includes choosing the roles of the change agents and making sure that they are understood by all parties. As a sixth step, change is maintained and generalized for the organization. Critical elements of this step consist of

communication, feedback, and group coordination. Final step involves terminal relationship, which translates to change agent gradually withdrawing from their helping role, as the change becomes part of the organizational culture (Kritsonis, 2005). As evidenced here, this change model goes more into detail with specific steps of the change process than in Lewin's model, with a lot of emphasis placed on the change agent, the individual or group of individuals who are responsible for seeing the change through.

### **3.1.3 Kolb and Frohman model**

Similarly, to the previous model, the change management model by Kolb and Frohman (1970) is an elaborated version of the three-step model by Lewin. The relation between the models is presented in table 4. This model has been created from a consultancy viewpoint, and it looks on to the client-consultant relationship. In the Kolb-Frohman model there are seven total steps in a change process, similarly to the model by Lippitt et al. (1958). The seven steps consist of scouting, entry, diagnosis, planning, action, evaluation and termination. A visualization of the differences between Lewin and Kolb-Frohman models is available in table 4. Although this model has fundamentally the same steps as the model by Lippitt et al., the viewpoint is more focused on the provider and client relationship, rather than the purpose of a change agent (Shrinivasan & Davis, 1987).

Table 4: The relation between Kolb-Frohman and Lewin's change models (Ginzberg, 1979, p. 88)

<b>Kolb-Frohman stage</b>	<b>Activities</b>	<b>Lewin-Schein stage</b>
Scouting	- Client and consultant assess each other's needs and abilities; entry point is chosen	Unfreezing
Entry	- Initial statement of problem, goals, and objectives; develop mutual commitment and trust; establish need for change	Unfreezing
Diagnosis	- Gather data to define client's problem and goals; assess available resources	Unfreezing
Planning	- Define specific operational objectives; examine alternative routes to those objectives and their impact on the organization; develop action plan	Moving
Action	- Put the best alternative solution into practice; modify action plan if unanticipated consequences occur	Moving
Evaluation	- Assess how well objectives were met; decide to evolve or terminate	Moving and refreezing
Termination	- Confirm new behavior patterns; complete transfer of system ownership and responsibility to client	Refreezing

### 3.1.4 Bullock and Batten model

The next change management model by Bullock and Batten (1985) is presented as a four-phase model. This model attempts to compile the previous phase models into such a form, which satisfies all the criteria for evaluating phase models in organizational development. These seven criteria are introduced in the same paper by Bullock and Batten (1985) as the change management model. The four phases involved include multiple change processes which have been separated in models by Lippitt et al., and Kolb and Frohman as their own separate phases. It is discussed by Bullock and Batten (1985) that phases in their model are fluid enough to allow some overlap of the phases, but at the same time, predominant enough as not to lose the character of the phase. According to the researchers, the differentiating factor compared to earlier developed change models is the fact that their phases are linear and irreversible. The

change phases introduced in the model consist of exploration, planning, action and integration. All the phases hold up to three change processes within them. The motivation behind separating phases and processes resides within the fact, that phases should be irreversible and invariable in order to ensure linearity. However, many other change mechanisms occur, but there is little consensus about their order. Thus, Bullock and Batten (1985), saw it as reasonable to separate these dubious mechanisms as their own change processes that can happen within a phase variably and reversibly, while maintaining the order of the phases themselves. Exploration phase consists of the following change processes; need awareness, search, and contracting. In the planning phase, design, diagnosis, decision processes occur. Action phase hold implementation and evaluation processes within it. Finally, stabilization, diffusion and renewal are the change processes induced within the integration phase. The contents of these phases and processes are roughly the same as in the other previous models, so in-depth analysis is unnecessary. The bottom line is, that this model attempts to create a phase model that satisfies all the criteria for evaluating phase models in organizational development and can be used as a standard for linear change management.

### 3.1.5 Kotter's eight-step model

As the key reference in the field of change management, Kotter's (1996) model became an instant success when it was originally advocated. The model was first released in a Harvard Business Review article in 1995, with a more in detail version released as a book in 1996. The book in question, *Leading Change* 1<sup>st</sup> edition, became a business bestseller with hundreds of researchers having referred to it in their papers (Appelbaum, Habashy, Malo and Shafiq, 2012). The book's success is contradictory in a sense, as according to Appelbaum et al. (2012) it lacks in empirical fundamentals. No references or footnotes to outside sources are made, nor is there evidence of a thorough research or investigation to the matter. As such, the model is based solely on Kotter's personal business and research experience. These facts have not stopped the book from being an academic, as well as practical success (Appelbaum et al., 2012). Referring to Kotter (1996) and Smith (2005), Appelbaum et al. (2012) introduce the eight steps of the model for organizational transformation:

1. **establish a sense of urgency** about the need to achieve change – people will not change if they cannot see the need to do so;
2. **create a guiding coalition** – assemble a group with power energy and influence in the organization to lead the change;
3. **develop a vision and strategy** – create a vision of what the change is about, tell people why the change is needed and how it will be achieved;
4. **communicate the change vision** – tell people, in every possible way and at every opportunity, about the why, what and how of the changes;

5. **empower broad-based action** – involve people in the change effort, get people to think about the changes and how to achieve them rather than thinking about why they do not like the changes and how to stop them;
6. **generate short-term wins** – seeing the changes happening and working and recognizing the work being done by people towards achieving the change is critical
7. **consolidate gains and produce more change** – create momentum for change by building on successes in the change, invigorate people through the changes, develop people as change agents; and
8. **anchor new approaches in the corporate culture** – this is critical to long-term success and institutionalizing the changes. Failure to do so may mean that changes achieved through hard work and effort slip away with people’s tendency to revert to the old and comfortable ways of doing things.

All in all, according to Appelbaum et al. (2012), Kotter’s eight steps model remains an excellent starting point for managers implementing the change in their organizations. However, validation is lacking for the full eight steps of the change management model, and although the model gives emphasis for the steps to be done in the described sequence, there is currently indefinite evidence on the order’s actual importance (Appelbaum et al., 2012). The model’s lack of empirical evidence makes it somewhat divergent among the other change management models. However, it seems to have been able to overcome this via being more practical, having hands on examples from real life situations, and being targeted to a management audience, instead of an academic one.

### 3.1.6 Whetten and Cameron model

The most recent change management model in table 1 is the model by Whetten and Cameron (2005), which was introduced in their book “Developing management skills”. The book considered has been cited a considerable amount of times as evidenced in Google Scholar, but the change model itself seems to have been left to a lesser interest, as there are no studies or papers easily found that refer to this model of change. As according to Kang (2015) the model consists of 5 steps, but the fundamentals are otherwise the same as in other table 1 models and can be seen as an evolution of the Lewin model.

## 3.2 Model comparison by Brisson-Banks

Brisson-Banks (2010) has also gathered a number of change management and transition models for comparison, and these will be scrutinized next. These models are displayed in table 5. Notably, models by Lewin and Kotter intro-



duced earlier are on display here as well, thus they won't be examined again. The earliest of the models here (excluding Lewin) is the change model developed by Beckhard (1969). The model incorporates four processes, three of which are included in table 5 for comparison purposes. The first of the processes involves goal setting and defining the wanted future state after incorporating the change. After the goals have been set, the stage is to diagnose the present conditions in relation to the goals set in the first stage. In the third stage, the required activities and commitments for reaching the desired state are defined. As a last step, strategies and action plans to actually implement the plan are developed (Armstrong, 2006). It is further discussed by Rouda and Kusy Jr (1995) that this model takes a long-range approach, considers the whole organization with top management support included, and that incremental change over a period of time while involving people is important.

Table 5: Change and transition models (Brisson-Banks, 2010, p. 250)

Lewin	Bechard	Thurley	Bridges	Kotter
Unfreezing	Analyzing present condition	Directive		Sense of urgency
		Bargained		Form guiding coalition
		Hearts and Minds	Ending phase	Have powerful group to lead change effort
		Analytical	Neutral zone	Work together as a team
Changing	Setting goals for the future			
	Plan of action			Create a vision
				Communicate the vision
	Implementing the plan	Action based		Empower others to act on the vision
			New beginnings	Plan for short term wins
				Improve on the changes
Refreezing				Institutionalize the new approaches

### 3.2.1 Thurley model

The next change management model by Thurley (1979) involves five core strategies to management of change (Armstrong, 2006). The strategies are called di-

rective, bargained, hearts and minds, analytical, and action based. These strategies provide general guidelines on how to approach change, but they can also be matched against Lewin model's steps unfreezing or changing. The first four of these strategies consider the trigger and method for change, with consideration on laying the groundwork for change. Directive strategy is used when other methods have failed, and change needs to be undertaken quickly. According to Armstrong (2006) this involved the exercise of managerial power without consultation. The strategy can be useful in a crisis situation, but it is done with haste, and without considering the views or feelings of those involved in the change (Lockitt, 2004). Bargaining strategy has slower time to implementation than the directive strategy, but it takes into account those affected by the change and recognizes that power is shared between the employer and the employees. Furthermore, this strategy posits that in order for change to succeed, negotiation, compromise and agreement must take place before implementation (Armstrong, 2006). Hearts and minds strategy looks for commitment and shared vision. Armstrong (2006) describes the strategy as an all embracing thrust to change the attitudes, values and beliefs of the whole workforce. In essence, the strategy allows for full support of the changes being made and a shared set of organizational values that the individuals are willing to support. The advantages and disadvantages of the strategy are the same as with the bargaining strategy; implementation time increases with the benefit of added positive commitment (Lockitt, 2004). With the analytical strategy, the situation is first analyzed and diagnosed, after which the objectives are set. Then the change process is designed followed by evaluation of the results. After All the steps are complete, objectives for the next stage of the process can be determined (Armstrong, 2006). Last of Thurley's strategies is the action-based strategy, which can be categorized parallel to the changing stage of Lewin's three step model. Armstrong (2006) describes that this strategy recognizes the fact, that there usually is a large difference between theoretical and actual managerial action. It further stresses full involvement of all those involved, and affected by the anticipated changes (Lockitt, 2004). The difference to the hearts and minds strategy is that in it, real participation of the people involved is not a necessity, as it is here. These strategies by Thurley give different perspectives to managers responsible for change and they should be utilized accordingly. The choice of strategy might depend whether the change needs to happen fast, or with maximized internal support.

### **3.2.2 Bridges model**

Finally, last of the change models collated by Brisson-Banks not yet undergone earlier, is the model by Bridges (1991). The idea central to this model is that transition, rather than the change itself, is more problematic to people involved. Change is the situation itself, while transition can be seen as a more of a psychological matter. This psychological transition process has three separable phases; ending phase, neutral zone, and new beginnings. The ending phase is where

the old ways of conducting activities are abandoned. Changes can occur to personnel and jobs, but also the location itself during the realignment. Neutral zone is entered when the new setting is in effect including all the new activities, responsibilities and environment, which can be unsettling for the personnel involved. New beginnings is the period of final adjustment to the ways of doing different things in a new manner. The last phase can involve letting go those people, who cannot adjust to the requirements of the transition process. As is evident, the model by Bridges has people and people related transition at its core.

### **3.3 Model comparison by Todnem By**

The third paper that compares change management models, is a study by Todnem By (2005). As with the two earlier comparison tables, Kotter's eight step model is present, and it won't be scrutinized again. The two other models are Kanter et al.'s Ten Commandments for Executing Change (1992), and Luecke's Seven Steps (2003). Both of these models have commonalities with Kotter's model, with slightly different emphasis and order of steps. In Kanter et al.'s model, the organization and the need for change are first analyzed, after which a vision and a common direction are created. Next, past is separated and a sense for urgency is created. The model continues with emphasizing the need for support for a strong leader role and lining up a political sponsorship. Afterwards one should craft a plan for implementing the change and developing structures that enable the change. Last two steps include communicating and involving the people related to the change and reinforcing and institutionalizing the change.

Table 6: A comparison of three models of emergent change (Todnem By, 2005, p. 376)

<b>Kanter et al.'s Ten Commandments for Executing Change (1992)</b>	<b>Kotter's Eight-Stage Process for Successful Organizational Transformation (1996)</b>	<b>Luecke's Seven Steps (2003)</b>
<ul style="list-style-type: none"> <li>1) Analyze the organization and its need for change</li> <li>2) Create a vision and a common direction</li> <li>3) Separate from the past</li> <li>4) Create a sense of urgency</li> <li>5) Support a strong leader role</li> <li>6) Line up a political sponsorship</li> <li>7) Craft an implementation plan</li> <li>8) Develop enabling structures</li> <li>9) Communicate, involve people and be honest</li> <li>10) Reinforce and institutionalize change</li> </ul>	<ul style="list-style-type: none"> <li>3) Developing a vision and strategy</li> <li>1) Establishing a sense of urgency</li> <li>2) Creating a guiding coalition</li> <li>5) Empowering broad-based action</li> <li>4) Communicating the change vision</li> <li>8) Anchoring new approaches in the culture</li> <li>6) Generating short-term wins</li> <li>7) Consolidating gains and producing more change</li> </ul>	<ul style="list-style-type: none"> <li>1) Mobilize energy and commitment through joint identification of business problems and their solutions</li> <li>2) Develop a shared vision of how to organize and manager for competitiveness</li> <li>3) Identify the leadership</li> <li>6) Institutionalize success through formal policies, systems, and structures</li> <li>4) Focus on results, not on activities</li> <li>5) Start change at the periphery, then let it spread to other units without pushing it from the top</li> <li>7) Monitor and adjust strategies in response to problems in the change process</li> </ul>

In Luecke's Seven Step model, the first steps are approximately the same as in Kanter's model, starting with identification of problems, creating a vision and identifying leadership, but it also has steps that are outside of the scope of Kotter's and Kanter's models. These steps advice to focus on results, not on activities, starting the change at periphery and letting it spread without top driven approach, and monitoring and adjusting strategies in response to problems with the change process. A more detailed comparison of these three models can be found from the table 6 above.

### **3.4 Compilation of the reviewed change management models**

Here, the previously reviewed change models are gathered into a single comparative table. The best-known models are compiled from the three comparative studies explored. The table shows the relations between the phases of each reviewed change model against the original change model by Lewin (1951).

Table 7: A change management model comparison

Reviewed change management models																
Authors	Lewin (1951)	Lippitt et al. (1958)	Beckhard (1969)	Kolb and Frohman (1970)	Thurley (1979)	Bullock and Batten (1985)	Bridges (1991)	Kanter et al. (1992)	Kotter (1996)	Luecke (2003)	Whetten and Cameron (2005)					
Phases	Unfreeze	Need development	Analyzing present conditions	Scouting	Directive	Exploration	Ending Phase	Analyze the organization and its need for change	Establishing a sense of urgency	Mobilize energy and commitment through joint identification of business problems and their solutions	Establishing a climate of positivity					
					Bargained											
				Entry	Hearts & Minds											
	Change	Change relationship	Setting goals for the future	Diagnosis	Analytical	Planning	Neutral Zone	Create a vision and a common direction	Creating a guiding coalition	Develop a shared vision of how to organize and manage for competitiveness	Creating readiness for change					
												Clarification or diagnosis	Planning	Separate from the past	Developing a business strategy	Identify the leadership
		Transformation	Implementing the plan	Action	Action-based	Action	Line up political sponsorship	Generating short-term wins	Institutionalize success through formal policies, systems and structures	Articulating a vision of abundance						
												Refreeze	Generalization	Evaluating	Termination	Integration
		Terminal relationship	Evaluation	Termination	Integration	Reinforce and institutionalize the change	Anchoring new approaches in the culture	Institutionalizing the positive change								

As the table 7 above demonstrates, all of the phases in the scrutinized change models can be related to the three stages of Lewin's (1951) model: unfreeze, change, and refreeze. The emphasis and number of steps involved in the change differs heavily between models. It can be seen for example, that the newer models tend to have more steps especially in the change phase. Less emphasis is placed on unfreezing and refreezing steps of the overall change process, some of the change models do not even consider the implementation of the changes introduced through refreezing activities. According to the amount of references and the rate at which they appear in the literature, the most popular change models seem to be the original by Lewin (1951), and the relatively modern model by Kotter (1996). The first was included in two of the change model comparing studies by Kang (2015), Brisson-Banks (2010) and Todnem By (2005), while the latter was included in all the three studies.

### 3.5 Synthesis of the literature review

In the literature review section of this paper, the key definitions, benefits of change management in information systems context, and change management models were explored in order to form an understanding of the change management environment in IS context. Forming this understanding helps in recognizing the possible shortcomings of the current change management models in IS context and helps in formulating interview questions in order to maximize the knowledge and lessons that can be gathered.

Going through the literature, it became apparent that good change management methodologies have a positive effect on information system projects, as was demonstrated in the study by Ziemba and Obłąk (2015), where two projects were compared with other having proper change management methodologies in place, while the other one did not. Also, the study by Hughes et al. (2017) supported this notion, through assessing that poor change management in information system projects is one of the key factors why IS projects fail. Current studies don't address however, which elements within poor change management are cause of failure in IS, as it is usually not defined with proper accuracy in the relevant papers. All in all, there is evidence to support the notion that good change management practices are valuable in IS projects, however the details should be further expanded upon in order to create consensus whether it is more favourable to concentrate on change management methodology, leadership or training, and what are the relations of each entity within IS context.

The most extensive part of this literature review was the examination of the existing change management models and frameworks, which was done in order to properly understand the tools change management tools available for organisations. It became evident that essentially all of the most well-known and cited change models were versions or extensions of Lewin's (1951) three-step model from the 50s. The fundamentals of most of the models were relatively same, with preparing the organization for the change, managing the change,

and then refreezing the new habits and processes within the organization being evident in way or another. In most of the scrutinized models only the order of the steps in the model, amount of the steps, or order of the steps differed, with basic fundamentals staying the same. However, despite similarities, not all the models were as widely used or cited. The model which kept appearing in research papers was Kotter's (1996) eight step model, which does not have a proper empirical background, or any sources listed. Kotter's model seemed to remedy these shortages through extensive real-life examples and his own work experience in the field of change management. A lesson learned here is that perhaps researchers should take a more practical approach on their change models if they want their models to achieve popularity and extensive use.

After moving on to the IS relevant change models and frameworks, it was noticeable that Google Scholar searches with combinations of change management and information systems provided little results. It seems that field of information systems is not keen on using the term change management. When changed to search terms such as project management, implementation, adoption, and combinations of these, relevant search results appeared again. Also, the IS relevant models and frameworks for change seemed to have emphasis on relatively smaller scale change projects which considered the implementation of a single technology on a more limited extent, while the general change management models seemed to have a more comprehensive point of view. In other words, there was difficulty in finding a change management model in the context of information systems, which would be applicable in a multitude of fundamentally different IS implementation cases. However, the point of this literature review was to gain insight on the change management environment, with a focus on tools available for change management from the viewpoint of information systems, and to recognize the current critical success factors for change management in information systems.

To conclude, it seems there is disparity in the usage of the term change management in information systems when comparing with more traditional fields of management. It is likely that words like implementation, transformation and project management are more prevalent in information systems context. It is also somewhat recognizable that change management and information systems have not been extensively researched together tied in the same context. Some evidence of this can be derived from the paper by Hughes et al. (2017), where it was made clear that change management is important in IS, but there was little specifying information for IS only context. Rather the change management issues from other fields of management were extended to apply to the field of information systems as well.



## **4 RESEARCH METHODOLOGY**

In this chapter, the research methodology used in this study is explained in detail. Motivation for the choice of methodology is provided, and the approach for gathering and analyzing the data collected is introduced. The research was conducted through qualitative, open-ended interviews where five change management professionals of a large multinational consultant firm were interviewed. Interviews were conducted following a semi-structured manner. The goal was to gather the most relevant learnings for information system change management from different change management relevant projects conducted lately for different client firms. The analysis method chosen was inductive content analysis, as it fits a research situation where little previous information is available, which is the situation with change management in information systems.

### **4.1 Qualitative research approach**

According to Kaplan and Joseph (2005), qualitative research generally involves systematic and detailed study of individuals in a natural setting. Furthermore, qualitative methods employ data in the form of words, examples of which are interview transcripts, written observations and other descriptive documents (Kaplan & Joseph, 2005). Golafshani (2003) states that qualitative research employs a naturalistic approach, with the ultimate intention of understanding phenomena in a context specific setting. Kaplan and Joseph (2005), expand upon this thought by stating that qualitative research methods work well when trying to understand what naturally occurring processes and events lead to the considered phenomenon over time. In information systems setting, the context in which the phenomena are occurring can include social, cultural, organizational and political concerns surrounding information technology, without forgetting processes such as information systems development and use (Kaplan & Joseph, 2005). It is also important in qualitative research that the researcher

does not attempt to artificially manipulate the phenomenon of interest (Patton, 2001). Strauss and Corbin (1990) offer a very wide definition for qualitative research, where they argue for it to mean “any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification.” Moreover, Hoepfl (1997) states that while quantitative researchers seek causal determination, prediction and generalization of findings, qualitative researchers rather seek illumination, understanding and extrapolation of these findings to similar situations.

Qualitative research methods are especially useful in research situations where examining the dynamics of a process, rather than its static characteristics is the goal (Kaplan & Joseph, 2005). Furthermore, Kaplan and Joseph (2005) explain that qualitative methods are particularly helpful in:

- Determining what is important to measure, or if study subject is difficult to measure
- Understanding not only what has happened, but why has it happened
- Investigating social, organizational and cultural context on the study area
- Examining causal relationships
- Studying processes as they develop and emerge, not only the outcomes and impacts.

Qualitative research methods consist of two major types of research (Bogdan & Biklen, 1997). These types are: a) participant observation, and b) in-depth interviewing. According to Bogdan and Biklen (1997), in-depth interviewing is described by open-ended questions in order to gather as many details as possible about a phenomenon. Open-ended questions also allow the interviewee to answer the questions in their own frame of reference, without the possible bias created by a pre-arranged set of questions. This should lead to more freely expressed thoughts by the interviewee (Bogdan & Biklen, 1997). As is stated by Bogdan & Biklen (1997), qualitative research is inductive by its nature. This implies that when doing qualitative research, it is not the goal to prove or disprove hypotheses that pre-exist, but rather the theory is built from bottom up. The structure of an interview can thus be more of a direction giving instead of specific questions that are repeated to all the interviewees in the same manner and form.

Qualitative research approach was chosen in this thesis due to its ability to act as a tool in understanding a phenomena in a context specific setting, in this case, change management in information systems setting. Additionally, as Hoepfl (1997) stated, qualitative research works quite well in a situation where understanding is sought and the finding are attempted to be extrapolated to similar situations. As current literature understanding in change management in information systems is quite narrow, qualitative research might be a better choice than a quantitative one due to lack of data. After conducting qualitative research with open ended interviews, information can be collected to understand a phenomenon from a new perspective, which might later serve as data

for quantitative studies. To conclude, qualitative approach helps in discovering new ideas and views on a rather untouched area of information systems studies.

## **4.2 Semi-structured interviews as a data collection method**

Rowley (2012) states that interviews are mainly used in qualitative research where the researcher has an interest in collecting facts, gaining insights and understanding opinions. Other collectable entities include attitudes, experiences, processes, behaviors and predictions. Rowley (2012) supports the usage of interviews over questionnaires in a situation where respondents are unlikely to have the time to fill questionnaires, or have very specific expertise in the field of study to provide more valuable insights in an interview situation.

On the subject of interview type, Rowley (2002) explains that semi-structured interview is the most commonly used interview type. She further delves in to the subject by stating that a novice researcher should schedule around six to twelve well-phrased questions for an interview, with some added flexibility on the questions asked and the extent of probing the interviewee for further information. In addition, sub-questions can be utilized if needed to ensure that the interviewee explores the main questions sufficiently (Rowley, 2002). David and Sutton (2004) instruct that in a semi-structured interview a rough interview guide or structure should be created, in order to gather similar type of data from all the interviews. Semi-structured interviews are flexible by nature, which implies that the researcher is free to vary the order and wording of questions (Power et al, 2010) as required by the situation. According to Hand (2003), the open nature of semi-structured interviews encourages depth and vitality, which is helpful in discovering new concepts. One of the downsides of using semi-structured interviews is the fact that novice researchers might struggle to identify the situations where additional probing for responses is appropriate (Doody & Noonan, 2013). In this study, an attempt was made to mitigate this possibility by looking at the lessons learned from earlier interviews and by consulting more experienced interviewers on the matter.

There are multiple reasons why a qualitative, semi-structured interview method was chosen to be used in this thesis. First, the subject of IS change management is complex and it is difficult to reliably measure objects that influence it. Second, semi-structured interviews are flexible, and offer the interviewer a chance to delve further into different subject if it is evident that the interviewee has extensive knowledge within that subject area. It is especially useful when interviewees have differing amounts of knowledge about different sub-topics, and have different professional backgrounds. Using a questionnaire form, for example, might leave important questions unanswered, or the answers might not give enough information context wise.

#### **4.2.1 Preparation, execution and analysis of the semi-structured interviews**

Empirical data used in this the research part of this study was gathered via semi-structured interviews with pre-selected candidates. The candidates were personally asked by the writer to take part in this study during spring 2019. The interviewees were also asked prior to the interviews whether they feel confident and experienced in the themes of the study. After initial talks, the chosen interviewees were deemed very knowledgeable in change management and privacy topics. They were also familiar enough with information systems to be able to give valuable insight towards the study at hand. The primary target of the interviews was to gather enough reliable information in order to address the research question of this study, which has the goal of creating information about efficient change management in information systems context. All of the interviews were conducted in May and June, 2019.

In preparation, a rough structure for the interviews was created which can be found in the appendix section of this study. The questions were used as a tool to follow that all themes of the interview were touched upon, and that similar data was gathered from all the interviews. Not all the questions were necessarily asked, and the depth of elaboration was considered case by case. This was mainly affected by the extent of knowledge that each interviewee had about each subject category, and the seniority of the interviewees. Interviewees provided many examples of change management in information system and that they have seen in their professional life. Most of these cases are client sensitive however, so many of the details cannot be shared here. Thus, any possible client names or other confidential data is anonymized. The average length of the interviews was approximately 45 minutes, with the interview length ranging from 35 minutes to 50 minutes.

With the permission of the interviewees, all of the interviews were recorded using mobile phone, to enable further analysis later without fear of losing critical information. The interviews were transcribed by the researcher in the early summer of 2019, by listening to the collected recordings of the interviews and writing them down on a computer. The transcripts were analyzed in depth during summer and early autumn of 2019 by focusing on the most interesting elements from the perspective of the study at hand. Inductive content analysis was chosen as an analysis method, which is introduced later in this paper.

#### **4.2.2 Interviewee background information**

The interviewees in this study are all from the same global professional services firm, more specifically from the Finnish member firm. The local firm has a few hundred employees, most of which are working in Helsinki, Finland. In table 8, the roles of the interviewees and interview dates are specified in further detail. All of the interviewees have received university or equivalent education. Four of the interviewees were men, while one was a woman. Each of the interviewed consultants have approximately 3-5 years of experience in working with priva-

cy and change management, and have worked in numerous projects within those subject areas. The middle management interviewee has approximately 10 years of experience within the study subject area, while the top management interviewee has accumulated experience for more than 20 years. Usual projects for interviewees include consulting and helping in different transformation projects considering privacy and other subject areas, where change management plays a crucial role. Many of the projects also involve consulting clients about implementing changes to information systems considering privacy. Table 8 below summarizes the interviewee roles and the dates of the interviews.

Table 8: Interviewee roles of chosen change management professionals and interview dates

#	INTERVIEWEE ROLE	INTERVIEW DATE
1.	Consultant	25.4.2019
2.	Consultant	30.4.2019
3.	Consultant	8.5.2019
4.	Middle management	14.5.2019
5.	Top management	6.6.2019

### 4.3 Inductive content analysis

Content analysis is a way to analyze written, verbal or visual messages. (Cole, 1988). According to Krippendorff (1980) content analysis is a research method that is used to describe and quantify a phenomenon. This kind of research method can be used to distil words into fewer content-related categories. Krippendorff (1980) describes content analysis as a method to produce replicable and valid inferences from data to their context. This has the purpose of providing knowledge and new insights, which can be put to further action as practical guides. Furthermore, content analysis is a form of research that can be applied in both qualitative and quantitative context (Elo & Kyngäs, 2008). Elo and Kyngäs (2008) describe that content analysis can be utilized in an inductive or deductive way. According to Lauri and Kyngäs (2005), inductive approach is recommended when there is not enough former knowledge about a phenomenon, or the available knowledge is fragmented or otherwise incoherent. Due to lack of research on the topic of this thesis, inductive content analysis approach was chosen as the analysis method to be utilized. Categories of interest are derived from the gathered data in this form of content analysis (Elo & Kyngäs, 2008). Elo and Kyngäs (2008) present phases of both of the content analysis processes in figure 7 below.

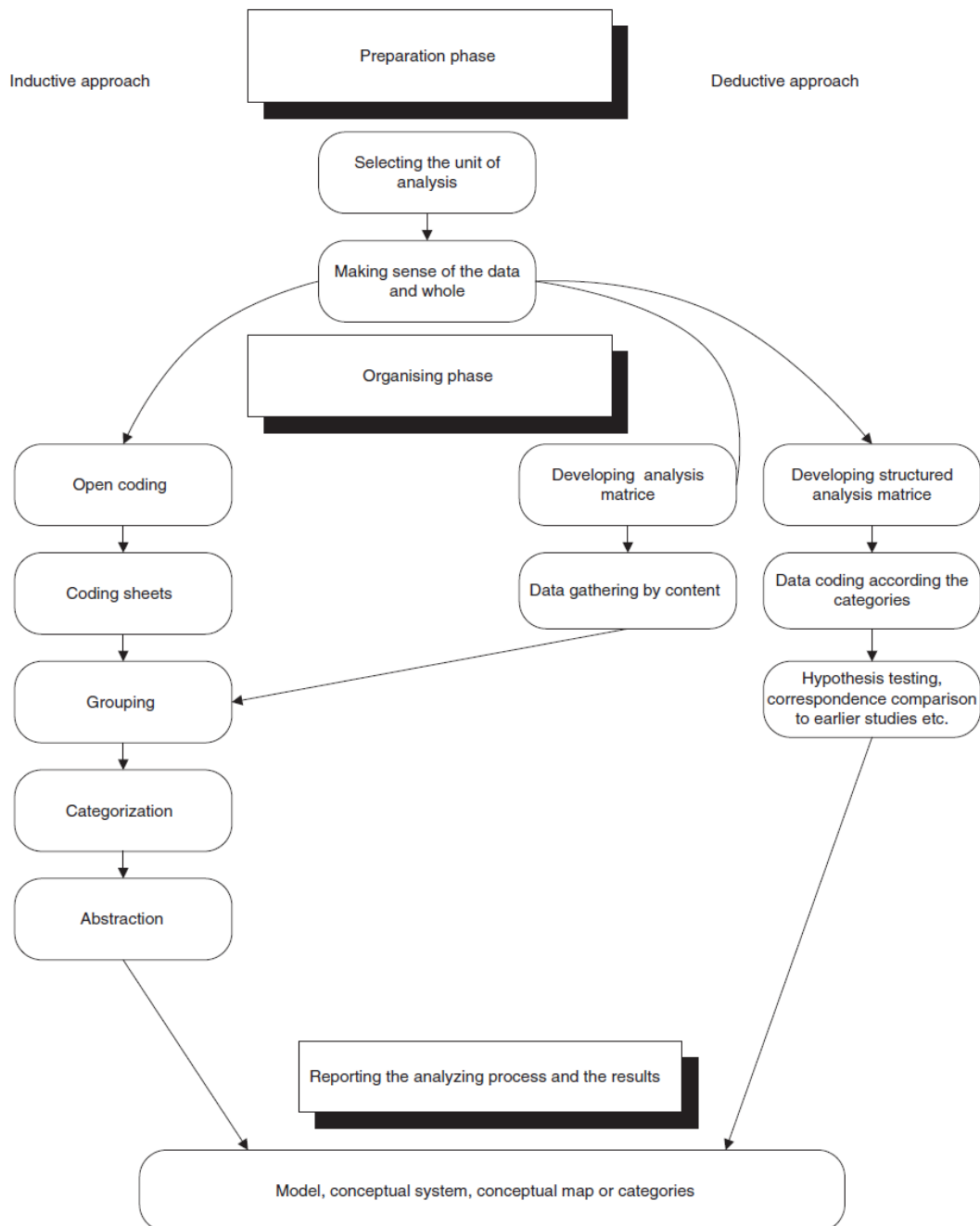


Figure 2: Preparation, organizing and resulting phases in the content analysis process (Elo & Kyngäs, 2008, p. 110)

Weber (1990) implies that both inductive and deductive analysis processes have three main phases which are: preparation, organizing, and reporting. He further states that all content analysis is based on classifying many words into smaller content categories. According to Guthrie et al. (2004) the preparation phase begins with choosing the unit of analysis, which can be a word or theme, for example. Graneheim and Lundman (2004) express that most suitable unit of analysis are both large enough to be considered as whole, while being small enough to be kept in mind as a context for meaning unit during the analysis

process. Whole interviews and observational protocols are examples of such units. After deciding the unit of analysis, researcher needs to make sense of data by answering questions such as who is telling, what is happening and why (Dey, 1993).

In the case of inductive content analysis, next step after the preparation phase is dedicated to organizing the chosen qualitative data (Elo & Kyngäs, 2008). Open coding, creating categories, and abstraction are all ways to achieve this. According to Elo and Kyngäs (2008), open coding describes the process of writing notes and headings in the text while reading it. These headings will then be collected on to coding sheets (Cole, 1988) and categories are freely generated (Burnard, 1991). After open coding has been done, the freely generated categories are grouped under higher order levels, as stated by Burnard (1991). This grouping is done for the reason of combining similar categories, and thus reducing the total number of categories (Burnard, 1991). Cavanagh (1997) further elaborates, that the reason behind creating categories is to provide means to describe a phenomenon and to generate knowledge. The last part of the organizing phase consists of abstraction, which means the process of creating a general description of the research topic by generating categories (Robson, 1993). When similar events and incidents can be recognized within the generated categories, subcategories emerge, and the originally recognized categories become main categories. This abstraction process will then be continued or as long as it is reasonable to do so (Elo & Kyngäs, 2008). Table 9 below provides an example of an inductive content analysis process utilized with the data gathered from the first interview with a change management expert. Results of further analysis are included in chapter 7.

Table 9: Inductive content analysis

Original expression	Headlines	Grouped expression	Category/CSF	Main category
...worst mistake that you can make is to go ahead with a project plan without the support of the top leadership, this can easily lead to going over the budget for example.	sufficient top leadership support	sufficient resources	Top management support	Managing change successfully in information systems context.
...there needs to be enough resources for the organization to push through the entire project. Otherwise there is a real danger of the project stopping half way and the change project might not achieve its intended goals.	sufficient resource allocation	sufficient resources		
...there needs to be an overall view of the situation and purpose of the project, then also the employees can better understand what the purpose of the change is which will mitigate change resistance.	capability to define the vision behind the change endeavor	sufficient vision	Shared vision for change	



Table 9 (continues)

<p>...going ahead with a plan too fast, without thinking about the real reason behind the change is a major mistake, you need to be aware of the real benefits of the change, and make sure to communicate them across the organization effectively.</p>	<p>capability to communicate the change</p>	<p>sufficient communication</p>	<p>Effective communication</p>	
<p>...in case of complicated information systems, you need to be able to audit all your relevant systems in order to understand the magnitude of the change.</p>	<p>capability to recognize critical systems</p>	<p>sufficient readiness for change</p>	<p>Organization's readiness to deal with the change</p>	
<p>...you will need to be able to pinpoint the ownership of the project and different systems.</p>	<p>capability to define ownership</p>	<p>sufficient readiness for change</p>		

## 5 STUDY FINDINGS

In this chapter, the findings of the study are presented and compiled. The recognized critical success factors for change management in information systems are gathered from each interviewee by using inductive content analysis to form high level abstractions from the gathered data. The goal of this section was to gather an array of most important change management critical success factors for information systems from the interviewees, in order to compare the CSFs to the current understanding in the literature of how to successfully handle change in the relevant IS context. As there is little existing literature for change management in IS, the results are compared against the CSFs provided by Ziemba and Oblak (2015), due to their study being the most comprehensive earlier study found with this theme. An attempt is made to update the CSFs in information systems change management, and explain the differences that might be found.

### 5.1 Interview results

In this section, the results of the interviews are analyzed per each interviewee. Themes that the interviewees deemed important are gathered to tables per each interviewee and are further compiled to a single table for easier comparison. In addition, the chosen CSFs are supported by authentic citations by each interviewee. In practice, the collected audio recording were listened to multiple times, while making notes. Afterwards the notes were interpreted via inductive content analysis to form high level CSFs for change management in information systems. The CSFs are not listed in order of importance, except for the first one listed. These are the single CSFs that according to the interviewee cannot be bypassed if there is to be any hope for the change project to succeed. The number behind each quote is used to tie them to a CSF introduced in the table of CSFs for each interview.

### 5.1.1 Interview 1

According to the first interview, the change management principles to follow in information systems context are ensuring leadership support, understanding and communicating the benefits and reasoning behind the change, and defining the responsibilities around the chosen change agenda. CSFs recognized in this interview have been gathered to table 10 below.

Table 10: Interview 1 results

#	CHANGE MANAGEMENT CSFS IN IS
1.	Top management support
2.	Shared vision for change
3.	Effective communication
4.	Organization's readiness to deal with the change

First interviewee saw top leadership support as essential for a successful information systems change project. The interviewee emphasized the importance of having the mandate of the leadership team for the change at hand. Without the support of top leadership, it might be difficult to motivate personnel or project leadership to properly see the change through. The leadership team also needs to be able to create a proper change organization around the planned change and set the proper goals that can be targeted towards. Another important factor mentioned that is strictly tied to leadership support, is the need for sufficient resources. Without enough commitment time, money, and personnel wise, the change project might only get halfway done, without achieving any significant goals.

*...worst mistake that you can make is to go ahead with a project plan without the support of the top leadership, this can easily lead to going over the budget for example. (1.)*

*...there needs to be enough resources for the organization to push through the entire project. Otherwise there is a real danger of the project stopping half way and the change project might not achieve its intended goals. (1.)*

The second and third CSFs evident in this interview consider sufficient understanding of the change situation at hand, and being able to share the vision for the change. The management involved in the change process must have an overall view of the situation and have to be aware of the purpose of the project, and what they are striving to achieve. There also needs to be enough internal and external communication to give enough information for the relevant stakeholders to keep them committed to the change process. In addition, the change process must be conducted with care, without rushing any parts of the process.

*...there needs to be an overall view of the situation and purpose of the project, then also the employees can better understand what the purpose of the change is which will mitigate change resistance. (2.)*

*...going ahead with a plan too fast, without thinking about the real reason behind the change is a major mistake, you need to be aware of the real benefits of the change, and make sure to communicate them across the organization effectively. (3.)*

The fourth major element that became evident in the interview is proper preparation for the change project, and organization's readiness to deal with the change. In the case of information systems for example, the organization will need to be aware of all the relevant information systems that might play part in the imminent change. The preparation also includes defining ownership for the project itself, as well as knowing the ownership of the different systems involved.

*...in case of complicated information systems, you need to be able to audit all your relevant systems in order to understand the magnitude of the change. (4.)*

*...you will need to be able to pinpoint the ownership of the project and different systems. (4.)*

Additionally, the interviewee noted that he has witnessed barely any evidence of organizations applying a change management model or methodology consistently during their change projects, which might be a counter

### 5.1.2 Interview 2

During the second interviewee it became evident that having a common vision for the change is the most important part of a successful change management endeavor. In total, there were six recognizable CSFs based on the second interview for successful IS change management, which are listed below in table 11.

Table 11: Interview 2 results

#	CHANGE MANAGEMENT CSFS IN IS
1.	Shared vision for change
2.	Top management support
3.	Defining roles
4.	Training and education
5.	Involving change agents
6.	Effective communication

In order to manage change successfully, the current status needs to be clear for those individuals who are responsible of the change plans going ahead successfully. It is exceedingly difficult to drive change forward successfully if there is

no clear view of the people, systems and other resources involved. Due to this, it is also imperative that the people chosen to lead the change effort know what they are doing and have sufficient experience from such endeavors. People need to know what changes and how, and are their responsibilities affected. The organization needs to be able to push the planned vision forward as one.

*...the most important thing is to be able to understand the current situation so you know how to go forward with the change effort. All the organizations are different, and situations can be unique. Vision going forward needs to be clear throughout the organization. (1.)*

Ensuring leadership support was another similarity to the views of the first interviewee. It became evident that not having leadership support can be very detrimental to the change effort at hand. Leaders can sometimes even go as far as having negative thoughts about the change effort and being vocal about the situation. Additionally, the allocation of sufficient resources is seen as part of the required top management support.

*...there was a CEO that came in that saw no point in GDPR related information system project so he stopped it to a standstill. (2.)*

*...driving successful change is all about the people. (2.)*

*...in addition to tangible resources, companies need to have the will and want to change and to push change through. (2.)*

Going forward, the interviewee returned to the subject of people and to the importance of using the human capital resources correctly. The important take-away that became evident here, is that people must be carefully assigned to roles that suit their skills. There must also be careful consideration about possible conflicts of interest, so that the people can actually manage their role in the way that it is supposed to be managed.

*...managing change is about getting the right people, and right people need to be in the right places. For example, CISO cannot be a privacy leader due to a conflict of interest. (3.)*

The fourth key area recognized in this interview was the sufficient amount of training that the people dealing with the change must acquire. This does not only involve the change project organization, but everyone who is affected by the upcoming change. It is evident in the current IS literature, that being trained and knowledgeable about implementation of new systems and software has the habit of also mitigating change resistance.

*...the staff that deal with the change and are affected by the change, need to be trained and educated to handle that change. (4.)*

Next, the interviewee emphasized the utilization of change agents. Change agents are vocal and influential individuals in the organization that people tend to listen to. Change agents can give valuable input on how the change is processing in grass root level, and they can be used to further affect the public opinion about the change within the organization.

*...change agents who have elevated knowledge need to be used in the "battleground" of change as eyes and ears of the company. (5.)*

The final CSF that was uncovered in this interview, was the need for transparency. For those involved and affected, there must be a sufficient level of transparency so that they know the background, the motivation, and the goals the change effort. There shouldn't be hiding of facts from the people who truly need it. Information should be made readily available for the relevant personnel without unneeded secrecy.

*...transparency is key in change management projects. People need to know what you are doing and why. Make the required information available to the people that need it. (6.)*

In addition to the CSFs listed here, the interviewee noted that he had not really witnessed consistent use of change management models and frameworks in the organizations he has worked with. Mostly the change management organizations and models were created ad hoc for the situation at hand.

### 5.1.3 Interview 3

Third interviewee saw top leadership as the most important factor for a change implementation project to be successful, similarly to the viewpoints of the first interviewee. Rest of the emerged change management CSFs in IS which were emphasized by the interviewee are gathered in the table 12 below. A total of 8 CSFs were recognized in this interview.

Table 12: Interview 3 results

#	CHANGE MANAGEMENT CSFS IN IS
1.	Top management support
2.	Shared vision for change
3.	Training and education
4.	Sufficient trust
5.	Managerial activity
6.	Sufficient change plan
7.	Performance measurement
8.	Effective communication

Top leadership support was seen as critical for a change management effort to be successful by the interviewee. For example, top leadership support in part ensures that the project has enough resources and the people working on it have and retain sufficient motivation to see the change through. The interviewee even emphasized that attempting to conduct a change project without leadership support is the worst mistake that can be made.

*...the support of top leadership is a must for a change project to succeed. If leadership is not interested in the change, the interest certainly will not trickle down to the rest of the organization. (1.)*

*...the worst mistake that you can make is to not ensure the support of the leadership. This has further implications still, as it most likely reduces the resources allocated for the change as well as the overall effectiveness of the resources used due to lack of motivation. (1.)*

Another CSF that stood out from the conversation considered understanding the larger picture behind the attempted change, and recognizing the change vision and what it means to individuals. This CSF has also been central in the other interviews. Additional information system viewpoint is that in order to finish of a change project in IS successfully, there needs to be a clear picture of how and which information systems are affected, the relations between these systems need to be clear, and the changes in daily routines following the change must be thought of.

*...the change starts with understanding. It needs to be clear what the change means to the organization, and each individual affected by the change. There needs to be awareness which information systems are affected and to which degree. (2.)*

Training and education of those involved in the change was again recognized as a key factor for success. Emphasis needs to be placed on those tasks that are affected by the change the most. People need to be aware why the change occurs and why is it important to see the change through.

*...it is of utmost importance to educate and train the personnel to cope with the upcoming change. For example, if information systems need to be mapped, it needs to be clear why this needs to be done. (3.)*

Fourth CSF recognized in this interview considers the trust inside the change project and/or the change organization. Interviewee emphasized that when there is trust within the team pushing the change process, there will be lesser disputes. This in turn will result to more efficient use of resources, such as time and money, within the project.

*...Inside the IS change management organization, there needs to be trust. This will result in fewer disputes. (4.)*

The next CSF considers managerial activities, and in more detail, the abilities of the change manager, who is responsible of the overall progress and success of the change endeavor. This CSF ties to the fourth CSF recognized in this interview, as it considers the synergies within the change organization and the ability of those responsible for the change to work together. It is noted that change manager must have proper authority, abilities and training that working successfully in the role requires. It is advisable that the change manager in has previous experience in leading change of a relevant magnitude.

*...the change leader needs to authority to keep the project in check time and resource wise. (5.)*

*...the actions of the change manager are critical for success. (5.)*

*...change manager must be properly trained. (5.)*

Sixth recognized CSF for successful IS change management is the need for a proper timetable and goal for a project. The timetable needs to be realistic, but exist in such a manner, that people keep working efficiently. Goal(s) need to be tangible so people are aware of what they are striving to achieve.

*...A change project must have a followable timetable and destination so that people know what the goal is and strive towards it. (6.)*

In order for a change management effort to be successful, it needs to be ensured that the effort can be put into practice. The next CSF talked by the interviewee takes this into consideration by attempting to ensure the verification of the success of the issued change, and measuring the performance involved. It is necessary to follow, whether people actually follow the rules and use the new systems correctly, for example. Change is only truly successful if it results into new more efficient working practices taking hold within the organization.

*...After the change project has been completed, it is important to follow up on how the change has gone into practice. This is important to check in order to make sure that the change won't be abandoned half way through. (7.)*

*It has been noticeable in some organizations that enough resources are not put into the matter of following that change has actually taken place. (7.)*

The final CSF recognized in this interviewee is about communication, which has been recognized as an important part of successful change in other interviews as well. Interviewee noted that in addition to informing affected people properly in everything they need to know about the change, there should be attention towards the ways of communicating. People need to be communicat-



ed in a way that they understand the message, and the use of jargon should be reduced to a minimum.

*...The role of communication is critical in information systems projects. People need to have the information they need available. Use of jargon must be avoided so all the employees can understand what is going on. (8.)*

In addition, the interviewee noted that she has not evidenced a proper use of change management models in the organizations she has worked for. She added that another way to quickly improve change management, is to include at least a basic step-by-step guide that everyone in the organization can utilize in change processes.

#### 5.1.4 Interview 4

The fourth interviewee had a similar perspective as the previous interviewees and raised leadership support as the single most important piece of a change management process. In total, he recognized a total of 8 CSFs, which are listed in table 13 below.

Table 13: Interview 4 results

#	CHANGE MANAGEMENT CSFS IN IS
1.	Top management support
2.	Training and education
3.	Involving change agents
4.	Effective communication
5.	Organization's readiness to deal with the change
6.	Sufficient change plan
7.	Performance measurement
8.	Shared vision for change

According to the interviewee, if a change effort does not have the support of the leadership, there is barely any reason to attempt the change at all. It will be difficult to obtain any of the key resources that the change requires.

*...leadership support is the key for successful change. If leadership is not supporting the change effort, there won't be enough resources, time, money or staff to conduct the change. It is not wise to fight against windmills. (1.)*

Second key CSF for success in IS change endeavor considers an already well discussed area, the training and education of the people involved. In addition to purely training people for the change, this interview highlighted the need for a training method that goes both ways. For example, workshops where people can voice their concerns and have a chance to be interactive are good tools for a

change manager. Workshops can be highly tailored to meet the needs of individual teams within the organization.

*...it is important to unravel change resistance via involving people affected by the change. Organizing workshops where people can find the connection between the change and their everyday work. (2.)*

The next discussed CSF was also in line with the other interviews, and it considered the role and usage of change agents. From the interviewee's experiences, the role of a more thoroughly trained individuals to champion the change among other individuals of the organization should not be neglected. These individuals might possess social status and respect within the individual teams which makes it easier for other people to interact with them, when comparing against the top leadership for example.

*...it is good practice to involve change agents to champion the change. Change agents should be more trained individuals who know more about the coming change, and are able to help other individuals adopt the change. (3.)*

The fourth change management CSF is centered on communicating information to those who fall under the effects of the upcoming change effort. This considers both the change team and the people whose everyday work practicalities are affected by the effort. Information needs to be easily available in an understandable format.

*...information considering the change needs to be readily available for people who need it. (4.)*

Another key CSF discussed was the need for sufficient preparation before going ahead with the planned change. It was emphasized that there needs to exist a real predefined reason for the change to take place. There should be clear benefits involved and the people who need to apply the new methods in their everyday work must know of the benefits as well.

*...organization needs to properly prepare for the change effort considering information systems. People must be able to see the need for the change. (5.)*

Sixth CSF considers proper defining of a project schedule and the goals that the change management effort attempts to achieve. Furthermore, it is important that change effort is given enough time and that the process is not overly rushed. Change effort needs to be persistent. When there are tangible goals involved, it is also easier to follow if the process is going in the right direction, and whether the goals have truly been achieved.

*...change needs time and proper goals to succeed in being put to practice. Intermediary goals should be utilized so direction of the effort is easier to follow. (6.)*

Next CSF is about being able to verify, measure and follow the achieving of the set goals for the change effort. It is advisable, according to the interviewee, to follow the practical implementation of the change. Different metrics, such as efficiency and overall satisfaction of the people should be followed. Sometimes it might be more beneficial to reverse the change, rather than keep going with a seemingly unsuccessful change effort.

*...the implementation of the intended change needs to also be followed after the change project itself has ended. If it is noticeable that the intended change has failed, there might still be a reasonable opportunity to make further change, or reverse the process. (7.)*

The last CSF touched upon in this interview considers being able to recognize and understand the vision behind the change. It is imperative that information system change processes have an actual benefit behind them, and the change is not pushed solely because of change itself. Operational benefits and the business needs to be the starting point for an information systems change effort. Thus it is also important to recognize who the change affect and how, including the changing tasks and responsibilities.

*...change processes in information systems need to be seen first and foremost as projects for operational change. The vision for the change must be clearly defined and there needs to be a proper justification for the project. Needs of the employees must be a priority and they need to be aware of the benefits of the change and how it affects them. (8.)*

In addition to these CSFs, the interview pointed out that he has not witnessed any extensive utilization of change management models in the change efforts he has been a part of. It seems that especially within a more mature organization where change is constantly worked with, the people tend to know the most common change management principles by heart and do not follow any step-by-step models. These more experienced people seem to think that applying models in their work does not offer any extra value.

### **5.1.5 Interview 5**

CSFs discussed in the last interview were mostly the same as in the previous interviews. In this interview however, the basic leadership skills of the change leaders were seen as the most important thing for a long-term success in change management within IS context. A total of 8 CSFs were identified, which are listed in the table 14 below.

Table 14: Interview 5 results

#	CHANGE MANAGEMENT CSFS IN IS
1.	Leadership skills
2.	Effective communication
3.	Top management support
4.	Sufficient change plan
5.	Training and education
6.	Defining roles
7.	Involving change agents
8.	Gradual change

According to the interviewee, it needs to be remembered that leading change in information systems is about people leadership. In other words, leading change does not significantly differ from the principles of leading people.

*...leading change effort is at its core about leading people. One cannot forget basic good leadership principles. (1.)*

Second CSF is about being able to communicate the change for the organization and for the people in order to awaken their inner motivation. It is implied by the interviewee, that forcing change upon the organization and people is very ineffective and you would rather make them want to change. Encouraging this also has a good change of mitigating change resistance. In interviewee's experience communication is often an overlooked part of a change effort. Weight needs to be placed on making sure that communication is open, timely clear and targeted towards the right audience.

*...in my own experience, it is very important to be able to justify the need for change properly. Being able to do this also mitigates change resistance. You need to awaken the inner motivation of the organization and the people. (2.)*

*...communication is a much overlooked part of well managed change. Many times, communication is not open, timely or clear enough. Sometimes communication might also be targeted towards the wrong audience. (2.)*

Next CSF is a common one across all the interviews, and it considers leadership support. In interviewee's opinion, this is a classic area where things need to go right for the change effort to success. However, this interviewee does not see the top leadership support to be as crucial, as the leadership skills of the change managers.

*...top leadership support must exist for change effort to succeed. (3.)*

*...it is a classic area where things need to go right. (3.)*

The fourth CSF pinpointed by the interviewee is the need for clear goals and a timetable. The understanding of goals is important, as otherwise it is difficult to measure the success of the change effort. In addition, the timetable involved with the change needs to be realistic. If the schedule is too ambitious, the change has a larger chance to fail, or the change is superficial. In this situation the change might exist on paper, but in reality, it has not been put into practice and daily routines.

*...goals must be well understood so there is common understanding where the change effort is aiming at, and how to measure success. (4.)*

*...it is important to realize that change requires time. If change is rushed, it might be visible on paper but not in practice. (4.)*

Next, the interviewee talked about the importance of properly training the people who will be affected by the upcoming change. In addition, new processes should be practiced before fully applying the change in practice. Properly practiced processes also give people ground to be able to use the systems, for example, correctly from the beginning. This will also give insight whether the change is actually beneficial for the organization. Additional emphasis needs to be placed on making sure that the leaders who are given the mandate to lead the change, are properly trained and possess the necessary skillset.

*...people need to be familiarized and trained with new processes in order to be able to handle the upcoming change. New processes must also be practiced. In a large organization especially, it is easy to do changes on paper, but putting them to practice is a different story. (5.)*

*...change leaders need to be well trained and they must have the required qualities to successfully manage their role. (5.)*

Sixth CSF is about making sure that roles considering the change are distributed. People need to be aware what is expected of them considering the change, and who is ultimately responsible of doing what. It is important to place the correct people in the correct roles, so everyone can be utilized in a position where they best benefit the change process.

*...people need to be given matching roles and responsibilities. (6.)*

The interviewee then highlights the importance of utilizing change agents. He argues, that change agents can make it more likely that also other less experienced are able to better comprehend and accept to upcoming change. However, it is apparently quite difficult to find the best people to fill the roles of change agents and motivate them to act efficiently in that role.

*...utilization of change agents is good way to make it more probable that change is put into practice. However, it is difficult to find good people to fill these roles. Change agents also need to be motivated. (7.)*

The final recognized CSF in this interview touches the subject of driving change gradually. According to the interviewee's experiences, trying to create too much or too complicated change at once is risky and might easily end in failure, without any of the goals being achieved. This is why change needs to be pushed forward gradually, or little by little. All the applied changes should be piloted first in a limited environment, before going live organization wide.

*...trying to create too much and/or complicated change at once is not the best approach. Change should be conducted gradually, and the changes should first be piloted in a more limited environment. (8.)*

Regarding change management models, the interviewee mentioned that not many organizations consistently appear to utilize them. Rather some individuals might have used them as point of reference and guidelines. The interviewee added that choosing a change management model to use in an organization might help in achieving consistently a certain quality in change management work, as then it would not rest alone on the shoulders of individuals who have the understanding of different models of change.

## 5.2 Compiled results

The results of the previous analysis of the interviews are shown here in a single table. The different recognized IS change management CSFs are categorized on the left and the interviews which they appeared in are marked. The mentions for each CSF are quantified on the left to form a basic understanding which CSFs are the most important according to the interviewees. The most important factor mentioned by each interviewee is also bolded.

As the results gathered on the table 15 demonstrate, the interviewees were of one mind about the importance of ensuring leadership support, communicating the change, understanding the big picture, and training and education. The other CSFs presented in the table were more controversial, with amount of CSFs presented only once in the interviews counting up to four. Next, these findings will be compared to the literature's understanding of current change management in information systems, and whether any differences can be identified.

Table 15: Compiled IS change management CSFs recognized in the interviews

<b>Change management CSF</b>	<b>Interview 1</b>	<b>Interview 2</b>	<b>Interview 3</b>	<b>Interview 4</b>	<b>Interview 5</b>	<b>Times mentioned</b>
Top management support	✓	✓	✓	✓	✓	5
Effective communication	✓	✓	✓	✓	✓	5
Shared vision for change	✓	✓	✓	✓		4
Training and education		✓	✓	✓	✓	4
Involving change agents		✓		✓	✓	3
Sufficient change plan			✓	✓	✓	3
Organization's readiness to deal with the change	✓			✓		2
Defining roles		✓			✓	2
Performance measurement			✓	✓		2
Sufficient trust			✓			1
Managerial activity			✓			1
Gradual change					✓	1
Leadership skills					✓	1

## 6 DISCUSSION

In this chapter the answers to the research question and findings will be explored. Furthermore, implications for practice will be discussed. This study had the ultimate purpose of expanding the currently lacking literature on change management CSFs in information systems context. When organizations are able to recognize the most important critical success factors, their ability to better allocate resources in IS change endeavors grows. By being able to concentrate on the most important change management CSFs, the probability of leading successful change should also increase. After all, lack of change management has been recognized as having an ill desired effect on information systems relevant implementation projects (Momoh et al., 2010).

The current literature understanding of critical success factors in change management cited in this study is based on the research by Ziemba and Oblak (2015). These IS change management CSFs are used due to the relative freshness of the paper, and the fact that it is the only comprehensive study with the viewpoint of gathering change management CSFs strictly with information systems context in mind. The authors of the study have recognized the change management CSFs in IS in an extensive literature review, thus it was not repeated again for the purpose of this study.

### 6.1 Research question and findings

This thesis had the aim of gathering change management critical success factors from an information systems viewpoint by utilizing qualitative interviews with chosen change management and information system specialists. The reasoning for choosing this topic of study was the bolstering of the currently lacking area of information systems literature, and to better understand how the IS change management CSFs recognized in the earlier literature hold up against the opinions of professionals today.



The main research question of the study was the following:

- **What are the critical success factors for change management in information systems context?**

The sub-question used to decipher the answer is the following:

- **How do the critical success factors recognized in this study differ from the critical success factors currently recognized in the literature?**

For the purpose of answering the research questions, the data collected in the interviews was analyzed by using inductive content analysis, where phrases and comments by the interviewees were analyzed and used to form higher level categories which were then used to create categories of CSFs. Both the CSFs currently recognized and the CSFs that were recognized in this study have been collected to the table 16 below, which answers both the main research question, and the sub-question.

Table 16: Compiled list of change management CSFs in IS context and a comparison between the CSFs recognized in the current literature and findings of this thesis

<b>Change management CSF in information systems context</b>	<b>Recognized in the current IS literature</b>	<b>Recognized in this thesis</b>
Top management support	✓	✓
Effective communication	✓	✓
Shared vision for change	✓	✓
Training and education	✓	✓
Involving change agents		✓
Sufficient change plan	✓	✓
Organization's readiness to deal with the change	✓	✓
Defining roles		✓
Performance measurement	✓	✓
Sufficient trust		✓
Managerial activity	✓	✓
Gradual change		✓
Leadership skills		✓
Recognize the change	✓	
Employees' involvement	✓	
Employees' satisfaction	✓	
Information flow	✓	

The findings of this study indicate that the results of this study are somewhat comparable to the previously recognized critical success factors in information systems context. Eight of the listed critical success factors were found from both current studies and the results of this study, while eight critical success factors were only found from either one. The highest level of consensus was identified in top management support, effective communication, having a shared vision for change and training and education, as these were mentioned to be crucial for successful change management in IS by all, or most of the interviewees. Differences were also found in a few categories between the current literature and the results of this thesis. For example, current IS literature does not seem to recognize change agent involvement, role definition, sufficient trust, gradual change and leadership skills as CSFs, which came up as a part of the results of this thesis. On the other hand, current literature recognizes a few other categories which were not recognized in the study at hand as CSF, namely recognizing the change, employee's involvement, employee's satisfaction, and information flow. These distinctions are likely caused by the differences in the scope and perspective of the compared studies, and the method how the CSFs are raised above other success factors. As study by Ziembra and Oblak (2015) is based on public sector, while the viewpoint of the interviewees in this thesis was from the private sector, it might cause a different emphasis on the importance of different success factors. For instance, change agent involvement is embedded by Ziembra and Oblak (2015) within shared vision for change CSF. Similarly, role definition might be more tightly embedded somewhere else, rather than having been raised as its own CSF, like has been done in the study at hand. The differences do not necessarily mean that the current literature, or the results of this study are inaccurate, rather they might be more relevant in their own sub contexts. Moving on, the findings of this study are presented in more detail and supported with relevant literature findings.

The most popular, and arguably most important change management CSF in IS was recognized to be top management support. Three of the five interviewees picked it as the most crucial part of a successful change, and the other two interviewees also picked it as one of the CSFs. According to interviewees, the importance of top management support is paramount for a change to be successful, and a comment was even made that there is no reason to even attempt a change endeavor without having the support of organization level leadership. Top leadership support is important in securing enough motivation for the change to occur in the organization. It also allows those responsible for the change to get enough money, training, time and other resources to actually go through with the change. In addition, having top management support helps mitigate change resistance via setting a good example and showing that even they are committed to the change. Top leaders can demonstrate this by being the first ones to test and utilize a new information system, for example. Top management support should also introduce clear goals which helps in assessing success of the project. These thoughts get a lot of support from the existing literature. For example, Sutanto, Tay, Kankanhalli and Tan (2009) argue that top

management support in IS projects provides sufficient influence, power, and resources to push the change through. In addition, it was found in a literature review by Sutanto et al. (2009) in multiple system change related studies, that top management support is essential in facilitating intra-organizational system-related change. Chrusciel and Field (2006) also recognized top management support as crucial for success in an information systems implementation project. It is difficult to argue against the importance of top management support and commitment in information systems change endeavors. Top management should have the most comprehensive view of the status of their organization, and they should be the ones to recognize the elements required for the change to succeed. Thus, their support for successful change is paramount, as without their involvement, it is difficult to explain or justify the need for change to the rest of the organization.

According to the results of this study, effective communication is among the top CSFs for IS change management, as there was full consensus about its importance across all the interviews. Effective communication involves being able to communicate fast and purposefully all the change related information across the organization and articulate it in the correct form for the listener to understand. Having enough information in the right form is crucial for people in the organization to understand the need for change and be able to visualize what it will mean for their everyday routines. When introducing a new information system, there should be enough information available easily on how to use the system in question efficiently. It is difficult to argue against the necessity of effective communication on well managed IS change process. For instance, Ziemba and Oblak (2015) discuss that without proper communication, the employees involved in the change process cannot know the changes that have been made, are being made, and what changes should be made. More crucially, they will not have enough knowledge on what their tasks are related to the change to be implemented. Additionally, Graetz (2000) states that communicating the need for change is important, also from the grassroots up. Key stakeholders of the change effort need to assist in communicating the message about the change repeatedly up, down and across the organization (Graetz, 2000). In further support of effective communication, Kotter (1995) explains that communication coming straight from top management has excellent leverage in gaining commitment and increasing motivation throughout the change effort. It can thus be stated, that effective communication is an essential part of successful change management in IS context.

Another crucial change management element for IS recognized in this study, is the ability to have a shared vision for change throughout the organization. The vision on what the IS project is meant to achieve, and how does it fit in to the goals of the broader context of the organization should be clear in order for a proper justification for the IS change project to exist. The information gathered from interviewees in this study provides evidence on the importance of having a shared vision for change, as four of the five interviewees considered to be a critical success factor. Sutanto et al. (2008) support this notion by stating

that from a system change effort perspective, shared vision for change serves as a foundation for creating strategies for arriving at a future end-state. Having this vision is thus an important first in moving towards the actual change, and it needs to be shared by all the relevant stakeholders of the organization. In addition, Weber and Weber (2001) emphasize the importance of clear vision and objectives for organizational success in times of uncertainty, such as an organization being in a state of transformation.

According to the results of the study, training and education form an important part of a successful IS change process. Ensuring that this CSF is taken into account well enough does its part in making sure that all the employees know enough details about the change in order to know what is required from them, and are also able to use any newly deployed information systems in order to reap the maximum benefits from its use. Training and education of the employees who are affected by the change was seen as crucial by four of the five interviewees. Workshops and other meetings where communication goes both ways can be utilized so employees can learn, but also express their own thoughts about the change at hand. Weber and Weber (2001) support the importance of employee training by stating that via training employees gain initial experience about the change, for example a new information system, and are able to better support management in the upcoming change effort.

Although involvement of change agents does come up in the literature quite often when considering successful elements of change, it does not seem to have been widely recognized as a higher level critical success factor for change management in information systems. For example, Sutanto et al. (2009) do find the role of change champion, a role which can be seen as a leader of change agents, important element of successful change in intra-organizational system change management, but it is placed under top management support CSF. Moreover, Ziemba and Oblak (2015) see change agents as an integral part of shared vision for change, and do not raise it as its own CSF. Kendra and Taplin (2004) add to the importance of change agents by stating that managers who master change agent knowledge and the necessary social and management skills are crucial in improving the odds of IT project success. Change agents also can have an emotional impact on the staff working on an ICT project. For example, implementation of information systems largely depends on people accepting a system and generating positive feelings towards the system, in which change agents hold significant responsibility (Zorn, 2003). The previous statements demonstrate the importance and required attention of sufficient utilization of change agents in order to achieve satisfactory results for IS change projects.

The results raise sufficient change plan as another CSF in IS change management. Three of the five interviewed professionals raise it among their chosen critical success factors. According to their comments, in order for a change project to progress smoothly, it is necessary to form a change plan that allows enough time and intermediary steps for the change process. Creating a proper change plan also involves creating relevant metrics that can be used to follow

the progress of the change effort. Furthermore, creating a change plan involves managing human and other resources in an efficient way (Ziemba & Oblak, 2015). This, in part, allows the creation of best environment for the change effort to succeed. Cocks (2014) further supports the importance of a good change plan by stating that a clearly documented change management process helps in mapping the tasks and required resources. In addition, according to Kotter and Schlesinger (1989), change effort that is not clearly planned in advance but is implemented quickly tends to get bogged down because of problems that weren't anticipated.

Another CSF recognized in IS change management context is the readiness of the organization to conduct the change. Two of the five interviewees recognized it as a CSF, thus according to the results of this study, it was not seen to be as crucial CSF as some of the previously recognized CSFs where interviewees were more unanimous. The important aspects of organizational readiness include the necessary resources and skills that are required for the change to be thoroughly applied. Interviewees also made remarks, that in the case of implementing information systems for, you need to be fully aware of your organization's information system portfolio and how the systems relate to each other. This is necessary if you want to truly understand and benefit from an additional information system. When the organization is ready to adapt the change and the necessary groundwork has been properly laid, it is also more likely that the organization is able to reap the intended benefits of the change at hand. Literature supports the importance of organizational readiness to deal with change, for example, Sutanto et al. (2009) remark that conducting present situation assessments and managing expectations for the new system are important in order to succeed with an implementation of a new system. Additionally, Weber and Weber (2001) state the importance of being able to ensure the employees of the fact that organization is ready to implement the changes and achieve better performance as a result.

The next CSF recognized in the results of this study considers the proper allocation of roles considering the change effort. According to the results of the interviews, this CSF was a little more niche element of a successful IS change management effort, than top leadership support for example. Nevertheless, its importance was recognized by two of the five interviewees. For instance, it was raised as a fact that people who partake in the change need to be given roles and responsibilities that properly match their skills personal skills. Also, it became apparent from one of the interviewees experiences that people involved in the change cannot have too many roles and responsibilities at once possibly due to conflicts of interest, or simple overburdening. Current IS change management literature covers matters such as building an efficient team (Sutanto et al., 2009), as well as managerial activity, training the employees and planning the change as project (Ziemba & Oblak, 2005), but it fails to explicitly mention the importance of role allocation. It is likely that some of the mentioned entities, such as planning the change properly, might include careful role allocation for those people partaking in the change. However, according to the results of this

study, more emphasis should be placed on allocating change roles according to the skills of the individuals.

Performance measurement was another CSF that was recognized by two of the interviewees in this study. Interviewees had experiences of IT change projects where there was a clear lack of performance measurement which made it harder to recognize whether the change has actually been achieved in the wished extent. It was also noted, that when proper performance measurement is in place, it is easier to recognize the need for additional adjustments, or even abandoning the project and reversing the change, if it seems that things are not working as intended. This CSF also has considerable support in the literature. For instance, Ziemba and Oblak (2005) state that it is necessary to be able to follow the progress of the change effort in order to control IS change more effectively and efficiently. In addition, the ability to monitor and get feedback considering the change from the users enables organization to follow whether the change is achieving its objectives. Al-Mashari, Al-Mudimigh and Zairi (2003) agree with these statements and add that measuring and evaluating performance is critical for ensuring success of the business organization, as well as making sure that IT systems provide the value they were meant to provide.

Next CSF recognized, managerial activity, was only mentioned by one of the interviewees, but it has support in the relevant literature. It is also likely that many of the other interviewees saw managerial activity as a sub-category of some other mentioned CSF, such as organizational readiness for change, or sufficient change plan. The interview who raised managerial activity as CSF mentions that actions of managers involved in the change are of great importance if success is to be met in an information systems change management endeavor. Emphasis was also placed that the managers need to have enough authority to advocate the change and keep time and resources under control. Chrusciel and Field (2006) support the importance of managerial activity by stating that managers play a crucial role in managing the time of their subordinates and accounting for their involvement in the change process when necessary. Additionally, Luftman and Brier (1999) point out that IT managers need to have enough knowledge about new implementable technologies, and how they can best be integrated into the components of business. It is highly likely that all serious information system change projects include IT managers as a part of the change process, which makes the knowledge and skills of IT managers imperative for a successful IS change project. Many of these IT managers might have change management roles as well.

Next three CSFs recognized in the context of this study were sufficient trust, gradual change, and leadership skills. The common denominator for these CSFs was that they were only recognized by one of the interviewees, and they are not widely recognized as CSFs in the current literature under the names listed here. However, they are more or less included as parts, or sub-categories of the higher level CSFs that have been discussed in this paper and in the literature. For instance, sufficient trust can be seen as captured by sufficient organizational readiness, or as a result of effective communication. Similarly, gradual

change might be a side effect of good change plan and making sure the organizational readiness for change, by committing it little by little. Leadership skills is another possible CSF sub-category that can be seen as a part of managerial activity, proper change plan, or top management support for instance. These three entities however, did not receive much attention in the interviews or in the literature under these exact definitions, so it is difficult to justify raising them as high level CSFs for IS change management.

Due to the change management emphasis of this research, all the interviewees were also questioned whether they have recognized any extensive and formal use of a standardized change management models in the client organizations they have worked in. The answer from all the interviewees was rather exhaustive no. The interviewees had only witnessed ad hoc ways of managing the change in the organization during their projects. Such a complete lack of utilization of any change management models is surprising, as they seem like a good solution to make certain that many of the elements of success are naturally included in the change processes of an organization, without the need to reformulate a good change management structure every time. Further still, many of the CSFs recognized here in the context of successful IS change management can be connected with different steps of various change management models. The benefits of using a standard change management model, possibly with some situation specific modifications, was also recognized in the interviewees, as it would ensure certain standards across the organization in change management. However, based on the literature review and the interviews, it became apparent that many of the change management models are not seen as practical, which might be one of the reasons why they are not as widely used and accepted as one might expect.

## **6.2 Implications of the research for theory and practice**

This study offers some implications for theory and practice in the field of information systems. For instance, implications of the literature review section for theory are that change management literature in information systems context is still lacking. Few studies handle this issue, and especially information systems literature seems very preoccupied with issues such as ERP implementation, with change management barely mentioned. The various change management models looked upon in this study provide very general guidelines for managing change in organizations, with little information systems relevance. Information systems literature could benefit from implementing change management viewpoint more often in the studies, and maybe creating a higher level framework which could be utilized in a multitude of IS projects, instead of only in the implementation of single technologies. There are few studies that recognize the unique prospects of an information systems change project, with a few studies extending the thought that change management is important in information systems context, but not providing further details of the information

systems relevant areas of change management. The sole fresh study discovered in the literature review of this paper provided the basis of IS critical success factors in change management for comparison against the current study. The fact that few such studies seem to exist of this subject indicate that more research emphasis could be placed on critical success factors for change management in information systems. More studies should be conducted in different information systems contexts to allow more comfortable generalization of the critical success factors found and confirmed in this study. Additional theoretical implications consider the role of change management models. It appears that many organizations do not formally utilize a standard change management model in IS transformation. More studies could be conducted on the reasoning behind this, and whether the available change management methodologies are sufficient for the needs of a modern organization.

From a practical perspective, this study has a few key implications. First, many of the currently recognized critical success factors in information systems gain further confirmation in this study. Top management support, effective communication, shared vision for change, training and education, and sufficient change plan were all further confirmed to be a crucial part of a successful IS change project, as most of the interviewees agreed on their criticality. Especially top management support and effective communications were recognized as being critical for change management success in IS, as these CSFs had unanimous support from the interviewees. Top management support is seen as an absolute must for a change project in IS, as without it there will be not be enough resources, motivation, or organizational commitment to go through a change in a thorough way. Effective communication is critical in order to make sure everyone understands the need for change, its scope, and its effect on day to day work of all the parties involved. Without effective communication, change resistance might grow excessive for instance. In addition to providing evidence on the importance of many of the existing CSFs for change management in IS, two new candidates for CSFs were identified, namely the utilization of change agents, and careful role definition. Change agents are required to further spread the message of the change among the other employees and act as personnel who can help others in comprehending and adapting the change, which is important if the organization is to rely on the usage of a fresh new information system. Careful role definition is required to make sure that all the required change roles are fulfilled with people who have the suitable experience and training for the role, whether it is a technical information system expert, or a project manager. In addition, few sub-categories of CSFs were noted to be of special importance. These include ensuring sufficient trust within the change management organization, making sure change is gradual enough as not to try achieve too much at once, and basic leadership skills. The ability to further recognize these factors improves the ability of organizations to concentrate further resources to those critical success factors to ensure smooth transition process. The ability to allow organizations to direct resources correctly in IS engagements will also have a remediating effect on the rather high failure rate



of IS projects. Further implications rise from the lacking usage of change management models in change management situations. Organizations might not be utilizing change management models and different standardized methods in their change processes regularly, but the implication might be that many of the change management models might be too abstract and difficult to modify to differing situations. Implication of this might be the need for more easily generalizable change management models, but also looking for additional standard methods within change management context, in order to ensure certain level of quality across all change projects in the organization.

## 7 CONCLUSION

In this chapter the conclusion of this study are presented. A summary will be given about the outcomes of this research, while also discussing the contribution of the study, as well as the relevant limitations.

This research had the purpose of recognizing the most critical success factors in change management in the field of information systems. This direction was chosen due to the lack of current IS literature on the subject. Very few previous studies in IS have delved into the subject of critical success factors in the area of change management, rather focusing on the challenges of implementing single IS technologies or solutions. Research was conducted by utilizing qualitative interviews with chosen change management and IS knowledgeable specialists from a global consulting company, in its Finnish member firm. Five chosen professionals in different stages of their career were interviewed, and the results were analyzed by using an inductive content analysis method. This method allowed the researcher to form high level CSFs from the numerous elements that the interviewees mentioned as important for change management in information systems context. The results gathered were compared against existing literature about the subject, and new findings were highlighted.

Findings of the study strongly suggest that many of the currently recognized critical success factors in IS change management are accurate. For instance, top management support, effective communication, training and education, change plan and organizational readiness for change, among others, are examples of the critical success factors recognized in this study, which also have presence in the current literature. However, some areas that should perhaps require more attention were recognized as well. For example, utilization of change agents, and making sure that role allocation in the change process is done correctly might require more attention. Also, the importance of some of the sub-categories of CSFs, or elements that form the higher level CSF, such as the need for sufficient trust in the change organization, making sure change is gradual enough, and basic leadership skills have been recognized. Not all of the currently recognized critical success factors in change management in information systems were found to be relevant in this study as CSFs, but they are

not disregarded due to the limited scale of this research. This study also found out that there has been little usage of standardized change management models and methods in organizations with which the interviewees have worked with. The extent of change management field and the amount of available change management models should indicate that many organizations would have a change management model available which could be utilized in IS change as well, but this does not seem to be the case according to the results of this study.

The ability to further close the gap in IS change management research, and to confirm existing CSFs and additional CSFs and elements of successful IS change gives the organizations the ability to better allocate their resources in the volatile IS environment, which is known for its high project failure rates. Many of these changes consider ways of changing or upgrading the information systems in the organization, or the roles and methods of working in the information system environment.

## **7.1 Contribution to research**

This study contributes to research in a few ways. As the purpose of the study was to recognize the CSFs in change management in the field of information systems, the confirmation of previous CSFs and recognizing new CSFs and areas of interest for IS change management was the primary goal and contribution of this study. Many of the previously recognized CSFs in IS change management, such as top leadership support and effective communication, were found to be relevant within the context of this study. New considerations for CSFs were also found, namely the extent that change agents should be utilized, as well as the fact that roles in IS change management endeavors need to be carefully allocated to match the roles and skills of the relevant personnel. Secondly, some more specific areas of importance for change management in IS were identified, such as the need for gradual change and sufficient trust between the people involved in the change. The current understanding of change management in information systems is largely based on the work by Ziemba and Oblak (2015), but researchers such as Sutanto et al. (2009) have also contributed to the subject. The contribution of this research includes both the further confirmation of the CSFs recognized by these researchers, as well as expanding upon them. In addition, this study further confirmed the existing literature gap in IS change management literature, as few papers in the field delve in to the subject using these terms. IS literature seems to be keen on using terms such as implementation and being more concerned on the grass root level methodologies than looking for more widely applicable CSFs that should be taken care of before even considering the technology or situation specific methodologies for change. Moreover, in order to understand the current change management models and methodologies that are available for organization to utilize, an extensive literature review was conducted. The information about the models and their steps were gathered in a table by utilizing few key comparative studies on the subject,

performed by Kang (2015), Brisson-Banks (2010) and Todnem By (2005). The contribution is a larger scale comparison on the existing change management methodologies. Additionally, this study raised suspicion that many organizations are not utilizing any change management models standardly across the organization in IS environment, it rather seems that change management methodology is often created ad hoc. This is an interesting fact and could be followed up upon with additional research whether organizations are simply not using standardized change management methods or if the models themselves are not up to par with the required standard, or are perhaps too difficult to utilize in real life situations. This would lay ground for creating a change management model that could better serve the field of IS and could be used more substantially. Further studies could also include committing similar studies on IS change management CSFs as research done here, but on a larger scale in order to better confirm the applicability of the recognized CSFs. CSFs could also be better tied to different context, as in which CSF is more important in certain type of change. For example, how would the CSFs differ if the change is applied due to the own willingness of the organization, or if the change is posed upon the organization from the outside, for example due to regulatory compliance.

## **7.2 Limitations**

This research has some key limitations. First, the interview count is quite low at only five individuals. This has been attempted to mitigate by choosing interviewees with considerable experience on the subject matter, with a large number of engagements on relevant projects. However, with such a low number of interviewees, even a single interviewee forgetting something critical might skew the results quite a bit. Another limitation might be that the interviewees are purely from a professional services firm with an outside view on the client organizations' situation, which were used as the data point in this study. This could also be a strength however as the interviewees might not have a similar urge to hide facts or defend their viewpoints as interviewees who would be from an organization as the target of the study. In addition, many of the interviewees were talked to in Finnish, with the recordings of the interviews being used later to translate the data to English. As a result, some information may be lost in translation. Finally, there was little literature to compare the results of the study to. Thus, the comparison of currently recognized CSFs versus the CSFs recognized in the study might not be entirely accurate in describing the actual situation in the field.

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## APPENDIX 1 SEMI-STRUCTURED INTERVIEW SCHEME

### Background information for the interviewee:

-The point of the thesis is to create knowledge for **change management in information systems**.

-The goal of the interview is to gather general guidelines and principles on how to leverage change management in an information systems related projects. Additionally, if there is any advice on what NOT to do in a change management process, it is also appreciated. From the gathered information, CSFs for change management in information systems will be formed.

-If the project itself considered mainly information systems related matters, then simply replying to and/or discussing the questions is enough. If information systems were only a minor part of the project's scope, please try to elaborate matters from information system perspective.

-The discussion will be recorded for the purpose of preserving information until the thesis is written, after which all recordings will be erased. If this is not ok, then no recording will be made, and key points will be written by hand during the interview. This will slightly lengthen the interview.

-The interview is conducted in the preferred language of the interviewee (Finnish or English).

**-All the information will be anonymized. The interviewee or possible client organizations cannot be recognized in the final thesis or in any other publicly shared document.**

### General questions:

-Interviewee's role at home organization?

-Work experience in years. How many relevant projects?

-Size of the home organization?

**General advice based on experience in different change management projects (with information systems relevance):**

**Talking point examples:**

-How were change management processes leveraged in the project? (use of change agents etc.)

-Were any change management models and/or frameworks applied in the project?

-How was change resistance and other similar obstacles for change handled?

-What aspects of the change management process do you consider valuable and/or successful?

-What went wrong in the change management process? What would you advice to avoid?

-How would you improve change management processes, i.e. what should be taken into account more? Please elaborate from information systems perspective.

- What is the importance of ensuring leadership support?

-How would you see the importance of monitoring the change efforts throughout, and after the project?

**-Any other lessons learned:** (for example; how was change resistance mitigated, how was it made sure that people adopt the processes introduced by the change, how was it made sure that information systems are taken into account properly?)

**-Open word (what aspects ensure that change management in IS context is efficient/ what are the key success factors for such a project?)**