Implementation of IT Service Management in Australia: Case Studies Focusing on Organisational Change Strategies

A Thesis submitted by

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Abstract

In order to provide better Information Technology (IT) services to their customers, organisations are increasingly implementing the IT Infrastructure Library (ITIL). ITIL describes processes, procedures, tasks, and checklists that can be applied by an organisation for establishing integration with its own strategies, delivering value, and maintaining a minimum level of competency. It allows the organisation to establish a baseline from which it can plan, implement, and measure improvements as well as compliance.

Whilst the promise of ITIL implementation is compelling, many implementations do not achieve the anticipated outcomes. The extant literature provides very little information as to how ITIL is implemented or the organisational change strategies that organisations use to implement it. To find a point of comparison, study of Enterprise Resource Planning (ERP) and Business Process Reengineering (BPR) projects have found that there are similarities in this change processes with those observed during ITIL implementations. Research into the implementation of ERP and BPR has found that applying a formal change management strategy, incorporating a Socio-Technical Systems (STS) approach, can assist in the likelihood of a successful implementation.

This exploratory research was conducted using a multiple case study approach to investigate the organisational change strategies that organisations have applied to ITIL implementation. This research also sought to identify if using STS as an approach to organisational change can influence the success of ITIL implementations. In this research, one particular STS model, the Leavitt Diamond, was applied in order to investigate the inter-relationships between the STS components and how they are affected during the implementation of ITIL.

This research found that organisations were not deliberately selecting and applying an organisational change strategy during implementation. Interestingly though, without knowing it or doing so consciously, the organisations adopted similar organisational change approaches and types for their ITIL implementations. All eight of the organisations studied adopted a planned change approach with a phased ITIL implementation. The research found that although none of the organisations

deliberately applied an STS approach to their ITIL implementations, they did without realising, apply an STS approach. The ITIL implementation was found to require greater effort to be applied to the people component of the STS; followed by process, technology and structure.

The research also found that an appropriate amount of effort was necessary for each of the individual STS components; rather than an equal effort per component.

This research has developed new insights into organisational change strategies and ITIL implementations that had not previously been explored. Through this research, an ITIL STS Model of Organisational Change has been produced that provides a plan and overview of the primary decisions to be made, with the resultant actions, in response to changes to the STS components. This research provides ITIL practitioners, for the first time, information about organisational change strategies as they have been applied to successful ITIL implementations; as well as a model that may assist with developing their own organisational change strategies.

Certification of Thesis

This thesis is entirely the work of Malcolm Blumberg except where otherwise acknowledged. The work is original and has not previously been submitted for any other award, except where acknowledged.

Student and supervisors signatures of endorsement are held at USQ

Candidate's Publication List

During the course of this research, a number of research and industry papers were published. The publication list follows.

Conference Proceedings

ACIS 2014 Conference Proceedings	Blumberg, M, Cater-Steel, A, & Soar, J 2014, 'An Organisational Change Approach to Implementing IT Service Management'. Proceedings of the 25th Australasian Conference on Information Systems, Auckland, New Zealand.

Industry Publications & Presentations

itSMF National Conference	Blumberg, M 2012, 'The Importance of Considering People Factors in Successful ITIL Implementations' itSMF Leadit Conference, 20-22 August, Gold Coast, Australia.

Acknowledgements

Table of Contents

xvii

List of Figures

List of Tables

List of Abbreviations

Abbreviation	Full form
ANZ	Australian and New Zealand
BPR	Business Process Re-engineering
BSM	Business Service Management
CI	Configuration Item
CobiT	Control Objectives for Information and related Technology
CSF	Critical Success Factor
CSI	Continual Service Improvement
ERP	Enterprise Resource Planning
ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
ITIL	Information Technology Infrastructure Library
ITSM	Information Technology Service Management
itSMFA	The Australian Chapter of IT Service Management Forum
OD	Organisational Development
SFIA	Skills Framework for the Information Age
SLM	Service Level Management
STS	Socio-technical system
TQ	Total Quality

1 Introduction

This research investigates the organisational change factors that influence the success of IT Service Management (ITSM) implementations in Australia. This first chapter introduces the research. The background to the research explains the expansion of ITSM globally and the expectations of organisations in regards to the implementation of ITSM. The background includes the description of the Information Technology Infrastructure Library (ITIL®) as the most common ITSM framework. The research problem and the research questions are then stated followed by the justification for the research in terms of contributions to knowledge and practice. The methodology for the collection and analysis of data is provided next. This chapter concludes with the limitations of the research and recommendations for practice, for distribution of practice findings and for further research.

1.1 Background

The global spending on Information and Communication Technology (ICT) had been estimated to double between 2001 and 2011 and reach $US 4.4 Trillian. This was a compounded growth rate of 7.7 per cent. IT services was the second largest group in terms of global ICT spending in 2007 at nearly 20 per cent (WITSA 2008). The dependency on IT has increased even more in recent years with the growth of e-business (Huang et al. 2013). Increasingly organisations expect that Information Technology (IT) suppliers, internal or external, continually improve the services provided (Pollard & Cater-Steel 2009) with a focus on customer service (Galup et al. 2009). IT Service Management (ITSM) focusses on IT services and customers as a strategy for improving the delivery of IT. The benefits provided by ITSM can include an improved IT service at a lower cost with a focus on service rather than technology (Iden & Langeland 2010). ITSM is being increasingly implemented globally (Galup et al. 2009).

The majority of organisations that are implementing ITSM are implementing the Information Technology Infrastructure Library - ITIL (Tan et al. 2009). ITIL is a process based framework that manages IT related activities of an organisation (Iden & Langeland 2010). Organisations that implement ITIL do so with an expectation of benefits to the organisation. The primary benefits that may be expected by the

implementation of ITIL include service quality, a standardisation of service and customer satisfaction (Marrone & Kolbe 2011). Implementing ITIL is anticipated to achieve benefits for the organisation by improving the use of IT services and support resources. IT services are expected to be more reliable, available when required and meeting the IT requirements of the users of IT service (Shang & Shu-Fang 2010). The relevance of ITSM is not just for large companies. ITSM can be considered to improve productivity regardless of the size of the organisation (Lema et al. 2015).

1.2 Definition of Term - Implementing ITIL

Throughout this paper, reference is made to the implementation of ITIL. Difficulties exist with a description of ITIL as 'implemented' or 'implementing ITIL'. ITIL has been described as 'a set of comprehensive publications providing descriptive guidance on the management of IT processes, functions, roles and responsibilities related to service delivery and service support' (Pollard & Cater-Steel 2009, p. 165). The current version of ITIL consists of almost 30 processes described in a set of five books (Iden & Langeland 2010). ITIL is not implemented in the context of implementing all of ITIL including the thirty processes, the service lifecycle and the functions. Both Pollard and Cater-Steel (2009) and Iden and Langeland (2010) refer to 'implementing ITIL' and 'adopting ITIL'. Iden and Langeland (2010) noted that there is no company that is known to have implemented *all* processes and functions of ITIL. The use of 'implementing ITIL' as a phrase in this research is not to imply that all processes and functions have been applied. For the purposes of this research 'implementing ITIL' or the 'implementation of ITIL' or similar phrases will be used to describe the activities of the organisations that have selected certain ITIL processes and functions and applied them to meet the requirements of the organisation and their ITSM needs.

1.3 Research Problem

The implementation of ITIL requires a major financial investment and typically will require employee training, changes to processes, technology, culture and ultimately, organisational transformation (Ming-Shian et al. 2011). Organisations implementing ITIL expect a return on their investment (Marrone & Kolbe 2011). However, many organisations find that their implementation of ITIL has not achieved their

expectations (Pollard & Cater-Steel 2009). Only 56 per cent of 108 Australian organisations surveyed believed that the implementation of ITIL had, at least, met their expectations (Pollard & Cater-Steel 2009). Organisations that have not successfully implemented ITIL may therefore not expect to receive the benefits anticipated. The significant financial commitment for the ITIL implementation may not fit within the parameters of the expected outcomes.

This research into this significant problem considers organisational change strategies in response to the call for research to consider organisational change factors that influence the success of an ITIL implementation. There is an identified need to determine how organisations implement ITIL and what factors influence the success of the implementation (Pollard & Cater-Steel 2009). There have been only a small number of research articles that discuss issues related to ITIL adoption and have made calls for further empirical research (Iden & Langeland 2010). More recent research into ITIL has been conducted (Iden & Eikebrokk 2015) but the amount is still not significant. This research aims to identify the organisational change strategies being employed by organisations that have enacted a successful implementation of ITIL. This research aim leads to an overarching research question for this research:

What organisational change strategies are organisations employing to successfully implement an ITIL-based ITSM?

Based on the literature review the following four specific research questions (RQ1 to RQ4, as detailed below) have been formulated to address the research problem and answer the overarching research question.

The first research question seeks to develop an understanding of the organisational change strategies that organisations are applying to ITIL implementations.

RQ1. What organisational change management strategies do organisations use to implement ITIL?

The implementations of ERP and ITIL have been recognised for their similarity (Tan et al. 2009). Research into the failure of the implementation of ERP systems has identified a relationship to Socio-Technical System (STS) issues (Shah et al. 2011).

Research has also identified that implementing ERP with an organisational change strategy has been successful (Newman & Zhao 2008). Applying an STS approach to organisational change may provide a successful outcome (Galliers & Baker 1995). The second question aims to consider the STS approach to an ITIL implementation and determine how it may influence the outcome of the implementation.

RQ2. How does a socio-technical systems approach to the implementation of ITIL influence the success?

Having considered the organisational change management strategies, including an STS approach, applied to an ITIL implementation, the third research question focusses on the components of the organisational change that may determine the success of the ITIL implementation.

RQ3. What organisational change factors determine the success or failure of an ITIL implementation strategy?

The Leavitt Diamond is an STS theoretical model that proposes that changes to one component of an organisation during change affects other factors of the organisation. The final research question considers the relationships between the Socio-Technical Systems variables during an ITIL implementation.

RQ4. How does Leavitt's Diamond identify the relationships between Socio-Technical Systems components during implementation of ITIL?

1.4 Justification for this research

There are increasing signs that ITIL will be deployed by more organisations around the world with increased frequency and regularity. Forrester Research reported in 2008 that it was receiving an increasing volume of enquiries about implementing ITIL (Pollard & Cater-Steel 2009), while a rising number of organisations have already implemented ITIL (Iden & Langeland 2010). Organisations implementing ITIL do so with an expectation that the organisation will benefit. The expectation can be that IT services will be standardised and customer satisfaction increased (Marrone & Kolbe 2011) and that improvements in the reliability and availability of IT services will be made (Shang & Shu-Fang 2010). However, implementing ITIL is not without difficulties. The implementation of ITIL may be disruptive to an

organisation (Shang & Shu-Fang 2010) and may be very costly (Huang et al. 2013; Tan et al. 2009), necessitating business process changes in order to meet organisational requirements (Tan et al. 2009). Implementing ITIL can have a major impact on an organisation, creating a requirement for new skills and a new organisation structure (Iden & Langeland 2010). Despite increasing ITIL implementations and the growth of ITIL globally, it has been found that the implementation carries a significant risk of failure (Huang et al. 2013; Tan et al. 2009).

As identified in the research problem, many organisations are not achieving the expected benefits of their ITIL implementation (Pollard & Cater-Steel 2009). Added to this problem is the challenge created by the sparse amount of information available that inform the issues that may affect ITIL implementations (Iden & Langeland 2010) with the recognised need to research organisational change factors that influence the success of an implementation (Pollard & Cater-Steel 2009).

This research addresses the requirement for research into the organisational change factors associated with ITIL implementation and to provide strategies that organisations can apply in order to increase the success rate for implementation and achieve the expected benefits.

1.4.1 Contribution to Knowledge

The major contributions to knowledge are presented in this section. First, this research addresses the lack of knowledge regarding the organisational change strategies that are applied when organisations implement ITIL. Second, this study contributes to knowledge by identifying the application of an STS approach to the implementation of ITIL. Third, this research describes the requirements of the ITIL implementation to achieve a balanced Leavitt Diamond. Fourth, the relationships between the STS components affected by the ITIL implementation are identified by this research. The final contribution to knowledge is the ITIL STS Organisational Change Model. The four contributions to knowledge are now discussed further.

1.4.1.1 Organisational Change Strategies

Prior to this study there was a lack of research into the organisational change strategies used when organisations implement ITIL. One previous study had identified that of four ITIL implementations two had applied change as phased and the others as a big-bang approach (Pollard & Cater-Steel 2009). Other studies linking organisational change strategies to ITIL implementations were not found. This research found a consistency across the eight organisations regarding the organisational change strategies applied. All organisations implemented ITIL with a phased approach and as planned change. Each organisation applied the change with an STS approach, however none of the organisations deliberately selected the STS approach. Each organisation also implemented ITIL as proactive change and with a punctuated equilibrium approach. Seven of the organisations implemented ITIL as revolutionary change. The only organisation that implemented ITIL as an evolutionary change already had implemented ITIL several years earlier and was improving the ITIL ITSM services. The planned approach to change was consistent with ERP implementations and partially with BPR implementations.

This research responds to a gap in the literature by identifying the organisational change strategies that were applied to eight ITIL implementations. There was a recognised need to identify how organisations are implementing ITIL and the factors that influence the success (Pollard & Cater-Steel 2009) and this research has provided knowledge in this area that did not previously exist.

1.4.1.2 Socio-technical Change Strategies

Research identifying the STS approach to the implementation of ITIL is a significant contribution to knowledge. The organisations did not deliberately select the STS approach to organisational change but they did unknowingly select the strategy. The research found that the organisations had provided focus to each of the STS components during the ITIL implementation. The people component was provided with the most focus; followed by process, tool and organisation structure.

Research has previously been conducted into the effect of an STS change approach on the implementations of ERP and BPR. The research had considered that an STS approach to organisational change offered promise for positive outcomes

(Galliers & Baker 1995). This research found that each organisation applied an STS approach and all reported that their ITIL implementations had been successful. Research on the effect of an STS approach to an ITIL implementation had not previously been conducted.

1.4.1.3 Balancing the Leavitt Diamond

This research further contributed to knowledge by identifying the focus requirements for an ITIL implementation to the STS components in order to balance the Leavitt Diamond. The Leavitt Diamond is a model of organisational change that refers to the four STS components of people, process, tool and organisational structure and theorises that a change to one or more will necessitate a change in others to maintain the balance of the model (El Sawy 2001). Other views on the Leavitt Model include that the focus provided to organisational change requires an equal focus on the four STS components of the Leavitt Model (Bostrom & Heinen 1977).

This research identified that the eight organisations implementing ITIL did not provide an equal focus to all STS components. The ITIL implementations were considered successful with the view therefore that the Leavitt Diamond is balanced. The findings of the research include that the focus is not required to be equal but appropriate to the needs of the organisation and project. The research identified that the people STS component had the most effort provided. The process STS component received slightly less focus with tool and organisation structure third and fourth in ranking of effort respectively. Identifying the requirements of focus to the STS components of the Leavitt Diamond to enable a balance is knowledge that has not previously been identified for ITIL implementations.

1.4.1.4 Relationships Between the STS Components

This research contributes to knowledge by identifying how an ITIL implementation affects an organisation. There is no existing research in this area of implementing ITIL. This research considers the impact to an STS component when change is applied to another STS component. The research identified that the decisions made by the organisation implementing ITIL affect the organisation in varied ways. All organisations implementing ITIL will consequently implement new or changed processes. Organisations may choose to adopt a new supporting tool or to use an

existing tool. The implementation of new or changed processes may result in organisations deciding to create new roles and positions or to use existing roles or existing positions. These decisions create consequences for the STS components. A new tool will result in an impact to the people STS component in the need for training for the users of the tool. The decision to create new roles will affect the organisation structure STS component and the people STS component in response to training requirements.

A lack of research into ITIL implementations in regards to organisational change has resulted in a lack of understanding of the implications of ITIL implementations. The research identifying the relationships between STS components identified the affect that choices by the organisation implementing ITIL have on STS components.

1.4.1.5 ITIL STS Organisational Change Model

This research having identified the relationships between the STS components during the ITIL implementation identified that certain decisions and actions are consistent across the eight cases. In response an ITIL STS Organisational Change Model is presented that identifies the impact to the STS components through the ITIL implementation and the actions taken to meet the needs of the organisation while achieving a successful outcome. In support of the model a high level plan is also presented that states in table form the key points if the ITIL implementation and the actions that are to be taken to fulfil the requirements for the organisation.

1.4.2 Contribution to Practice

This research provides significant contributions to practice. This study provides to practitioners organisational change strategies that will improve the success rate of ITIL implementations and achieve their implementations objectives. Organisations will therefore not expend costs on implementation strategies that are likely to fail and will benefit from the anticipated service improvements that ITIL is expected to provide. There has been very little academic research into the adoption of ITIL even though there is not a clearly defined implementation strategy and at least one review has identified that there is a concern with the success of implementations (Pollard & Cater-Steel 2009). If the planning of an ITIL implementation does not

occur it could be anticipated that the implementation will not be successful (Pollard & Cater-Steel 2009).

1.4.2.1 Organisational Change Strategy

The first contribution to practice from this research identifies organisational change strategies that can be applied by organisations implementing ITIL. The need to research organisational change factors that influence the success of an implementation has been identified (Pollard & Cater-Steel 2009). This research has identified the organisational change strategies that the eight organisations applied. This research provides organisational changes strategies applied to successful ITIL implementations that can be used by organisations planning to implement ITIL.

1.4.2.2 The STS Approach to Implementing ITIL

The second contribution to practice from this research introduces the STS approach to implementing ITIL. While the first contribution provides a more generalised organisational change strategy the second contribution specifically refers to the STS approach to organisational change. This research found that organisations did apply an STS approach to the ITIL implementations although it was not a deliberate strategy selection. Each organisation successfully applied their ITIL implementations with an STS approach.

1.4.2.3 ITIL STS Organisational Change Model

The final contribution to practice is the ITIL STS Organisational Change Model. This model, developed from the successful ITIL implementations of this research provides for a strategy for ITIL practitioners that can be applied when implementing ITIL. The ITIL STS Organisational Change Model provides the key constituents of an ITIL implementation in respect of the STS components and identifies the actions required to maintain the Leavitt Diamond and provide for a successful outcome.

1.5 Methodology

This section includes an overview of the approach taken to collect and analyse the data required to address the research problem.

The data required to address the research problem was collected with a multiple case study approach. The case study approach was considered suitable because it uses actual problems and provides management knowledge (Gibbert et al. 2008). The case study was also considered as an approach suitable for the research as it allows for multiple case studies that can be conducted simultaneously, which in turn enhances the outcomes through increased research findings (Benbasat et al. 1987).

The data for the research was collected from semi-structured interviews conducted with leaders of the ITIL implementations of eight organisations. While the number of case studies in existing literature varies a review of the case study approach identified that a range of between six and ten cases is commonly applied (Eisenhardt 1989). The sample range for this research was determined to be eight to ten with eight actually participating. The eight organisations varied considerably in size, industry and location. The interview approach to collecting data is considered an appropriate method to gain information from participants who are considered to be experts (Milena et al. 2008). The approach also enables flexibility to adjust questions according to the responses provided (Saunders et al. 2009). The interview questions were constructed in four parts. The first part gathered information about the organisation and the organisation's ITSM prior to the ITIL implementation. The second series of questions sought to identify if the ITIL implementation was successful or unsuccessful. The third part of the interview included questions relating to the organisational change strategies and the STS approach to organisational change. The last section of the interview asked questions regarding the alignment of the Leavitt Diamond and the ranking of the STS components in order of effort required.

The interviews were conducted for a period of one hour with leaders of the ITIL implementation projects. Each interview was conducted with the same series of questions. Travel was required to enable the interview to be conducted in person. The interviews were conducted in Canberra, Adelaide and Darwin. Secondary data was

collected where possible. The secondary data included reports, information about the organisations from web sites, other documents relevant to the ITIL implementation project. The use of multiple sources of data in a case study approach has been found to increase the quality of the research (Yin 2009). To analyse the data the recorded interviews were transcribed. The data collected was categorised and sub-categorised. Excel spreadsheets and the qualitative software package NVivo were used to organise and analyse the data obtained. A within case analysis was conducted to assist in the management of the data collected. A cross-case analysis was then performed to search for patterns and to review the data by each category across the multiple case studies.

The data collected from the semi-structured interviews in conjunction with the prior research from literature enabled the conclusions of this research to be identified.

1.6 Limitations of the Research

The research conducted included organisational change strategies of eight organisations that successfully implemented ITIL. The success of the ITIL implementations was not known until the interviews were conducted. Consequently it was not found until that time that an unsuccessful ITIL implementation was not included in the research. A limitation of the research was found to be that a comparison could not be made with the organisational change strategies of organisations that did not successfully implement ITIL. Including unsuccessful implementations would enhance the research by enabling the comparison of organisational change strategies.

A further limitation of the research was identified as a lack of a consistent measure of the success of the ITIL implementation. The criteria for success were based upon previous research regarding the benefits of an ITIL implementation. The possibility exists that the criteria for success were interpreted differently by the participants in the research.

1.7 Recommendations

Based upon this research recommendations have been provided in regards to practice, distribution of research findings and further research.

1.7.1 Recommendations for Practice

The following recommendations are provided in regards to practice based upon the findings of this research.

1.7.1.1 Organisational Change Strategies

This research found that each of the organisations, although not deliberately selecting an organisational change strategy, applied a planned change strategy to the ITIL implementations and that the processes and functions were implemented with a phased approach. The recommendation is provided that organisations implementing ITIL consider an organisational change strategy of a planned change and phased implementation approach.

1.7.1.2 STS Approach to Organisational Change

In conjunction with the first recommendation that an organisational change strategy is considered when implementing ITIL it is further recommended that the ITIL implementation include an STS approach. The STS approach requires that focus is applied to each of the four STS components with the consequence that the requirements for each will be considered.

1.7.1.3 ITIL STS Organisational Change Model

The recommendation is made that the ITIL STS Organisational Change Model is applied to ITIL implementations. The model has been developed from the ITIL implementations researched. The model includes a high level plan that can be applied to identify the key requirements of the ITIL implementation and the actions necessary to complete them successfully.

1.7.1.4 Organisational Change Management Education for IT Students

The cases identified that the IT professionals tasked with the implementation of ITIL may not have skills or capabilities in regards to organisational change management.

The recommendation is provided that organisational change management is introduced into University Information Technology courses. It is considered that this will assist with the implementation of ITIL but also large IT systems generally.

1.7.1.5 Alignment of ITIL Roles with the Skills Framework for the Information Age

The structure component of the Socio-technical system refers to roles and positions. To ensure that the appropriate skills are identified for the roles it is recommended that organisations implementing ITIL refer to the Skills Framework for the Information Age (SFIA). The SFIA provides descriptions of skills required for jobs in the ICT industry (Nachayapat 2015). The SFIA Foundation, the not-for-profit organisation that oversees SFIA, advise that SFIA supports the skills management cycle including the planning of resources, the deployment of resource and also development and remuneration (SFIA 2016). The purpose of the recommendation that the SFIA framework is applied to ITIL implementations is that it will result in identification of the skills requirements necessary for the ITIL roles. A further result is that training requirements can be identified to ensure that occupiers of the roles have the necessary skills.

1.7.2 Recommendations for Distribution of Practice Findings

The researcher intends to distribute the research findings to people and organisations that will benefit from the knowledge. The following recommendations regarding the methods of distribution are provided.

1.7.2.1 itSMFA

The Australian chapter of the IT Service Management Forum (itSMFA) supported the research by assisting with the identification of organisations that may participate. In response to this support, the itSMFA will be provided with information from the research. The findings will be provided to the itSMFA in the form of a white paper and also by presentation to itSMFA forums and seminars.

1.7.2.2 Academic Articles and Conferences

The findings of this research will be communicated through academic channels including the use of journals and conferences. A Research in Progress article has

been presented to the Australasian Conference of Information Systems (ACIS) in 2014. Further submissions will be made with regards to the final findings.

1.7.2.3 ITIL Literature

The official ITIL books do not include how to implement ITIL (Pollard & Cater-Steel 2009) but do propose that the Kotter model of organisational change strategies is applied. This research has found that each of the organisations implemented ITIL with a planned change approach in contrast with the ITIL literature as provided by Axelos. The researcher will contact Axelos and provide the findings of this research for possible inclusion in future versions of the guidelines.

1.7.3 Recommendations for Further Research

This research into the organisational change strategies applied by organisations implementing ITIL addressed a gap in the research. Recommendations are made in regards to additional research that could be undertaken to increase the body of knowledge in this area.

1.7.3.1 Organisations that Applied Organisational Change Strategies

A finding of the research is that each organisation did not select an organisational change strategy for the ITIL implementation. Future research could include organisations that did knowingly select an organisational change strategy for their ITIL implementation. Research of this nature would enable a comparison with the findings of this research to determine if the strategies were similar or contrasting.

1.7.3.2 Unsuccessful ITIL Implementations

The findings of this research identified that all ITIL implementations were successful. Future research could also include unsuccessful ITIL implementations. A benefit to knowledge and practice would be obtained if organisations that had attempted to implement ITIL and failed had adopted different organisational change strategies.

1.7.3.3 A Measure for Success of an ITIL Implementation

Although the findings of this research are based upon successful ITIL implementations there is not a definitive measure of success. The measure of success for this research was essentially the interviewee advising that it was successful with justification against a set of criteria. Similar to the measure of the success of IT projects there is value in determining if the ITIL implementation achieved the expectations. Without an appropriate measure of the success of the ITIL implementations, organisations may not be able to determine if the cost benefits of the implementation have been realised. It is recommended, therefore, that future research include the determination of a measure of the success of the ITIL implementation.

1.7.3.4 Research Approaches

This research was conducted as multiple case studies. The recommendation is provided that future research considers other research methodologies.

A limitation of this research is that an unsuccessful ITIL implementation was not included in the case studies. A quantitative survey approach may include an unsuccessful ITIL implementation due to the increased size of the sample. The increased size of the sample may increase the range of data to be analysed and provide a wider understanding of the organisational change strategies applied.

This research was conducted as a cross sectional study resulting in the collection of data at a specific point in time. It is recommended that future research include a longitudinal approach to monitor changes over time. The observation of the organisations making decisions over time would provide a view of the choices that affect the variables of the STS components.

1.8 Structure of the Thesis

The structure of the thesis is based upon the recommendations of Perry (1998).

This thesis has six chapters:

Chapter 1, the introduction

Chapter 2, literature review

Chapter 3, research methodology

Chapter 4, data analysis

Chapter 5, findings

Chapter 6, conclusion.

Chapter 1 provides the background to the research and states the research problem and questions. The section also includes the justification for the research and the expected contributions to research and practice. The methodology for the research is provided in the first chapter.

Chapter 2 consists of the review of the literature relevant to the key theories included in this research. The primary theories included in this research are organisational change and IT Service Management. Significant components of the theories required for the literature review include planned change, STS and ITIL. The strategy applied to the literature review and the gaps in the literature are provided.

Chapter 3 considers the research methodology and the research design. The section describes and justifies the approach to the research. The chapter includes explanations for the research paradigm and the methods by which the empirical data were collected and analysed.

Chapter 4 provides an analysis of the case study data collected for the research. The chapter includes an overview of the organisations and the method applied to analyse the data. Sub-sections in the chapter provide an overview of the cases, the status of the ITSM before the ITIL implementation, the drivers of change and the success of the ITIL implementation. Further sub-sections examine the ITIL implementation and

the organisational change. The cross-case analysis, in which the data from each case is compared to other cases, completes the chapter.

Chapter 5 summarises and interprets the data collected and presented in Chapter 4 and considers the findings in association with the research problem and research questions. The findings are discussed and considered in regards to the overarching question and the four research questions.

Chapter 6 summarises the primary research findings and relates them to the objectives of the research. The chapter includes contributions to knowledge and practice and the limitations of the research. Recommendations are provided for practice, distribution of practice findings and for further research. This chapter includes the limitations of the research and directions for future research.

2 Literature Review

2.1 Introduction

Chapter 1 introduced the research problem: The unsuccessful implementation of ITIL may result in the lack of expected benefits and poor return on a significant investment. There is an identified need to determine how organisations implement ITIL and what factors influence the success of the implementation (Pollard & Cater-Steel 2009). In support of the research problem this chapter presents a review of the relevant literature of organisational change and ITSM. The literature review focusses on the primary theories that address the research problem. The literature review commences with the main theory of organisational change. Following this is literature on the theory of organisational development (OD) and then two approaches to OD in planned change and STS. Literature relevant to ITSM and ITIL is also reviewed.

To address the research problem the literature review includes the STS theory of organisational change and the Leavitt Diamond model of STS theory. Previous research into the implementation of the Socio-Technical Systems of ERP and BPR is reviewed with particular focus on the strategies for implementation. IT Service Management and ITIL will be reviewed with the narrowing focus on the implementation of ITIL with an STS approach.

The literature review is structured in six main parts. §2.2 discusses the literature review strategy applied to ensure the relevant literature for this research was identified. §2.3 reviews the main theoretical concept of organisational change. This includes the primary theory of organisational change and the theory of planned change. §2.3 also includes the implementation of ERP and BPR as socio-technical systems. The STS theory of organisational change is included in §2.4. §2.5 presents a review of the literature pertaining to IT Service Management. ITIL is a major stream of ITSM and a focus of this research. The review of ITIL related literature is included in §2.6. The next part of the literature review unites the theories of organisational change and ITSM in §2.7. This section of the chapter reviews the literature on implementing ITIL with an STS approach. The final part, §2.8, discusses gaps in the literature.

2.2 Literature Review Strategy

To identify the literature required for his research a literature review strategy was identified and adjusted as necessary to ensure that relevant literature was captured and fulfilled the requirements of the research. Figure 2-1 presents the key theories relevant to this research and the literature review.

Figure 2-1 displays a model of the alignment of the theories included in the literature review.
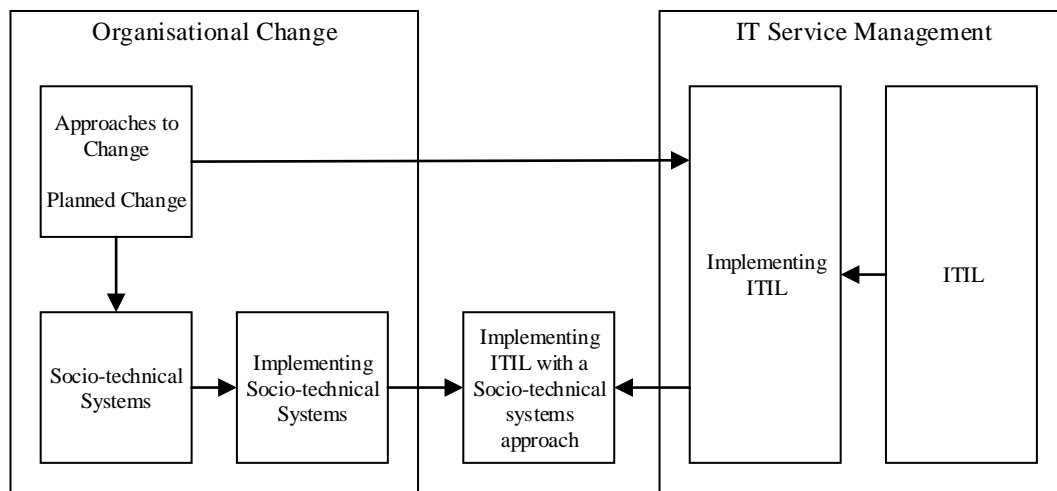
Figure 2-1 Primary Theories of the Literature Review

The literature review is conducted to develop a base upon which the research is constructed. The literature review will provide a solid understanding and knowledge of the research that has been conducted previously. It is important to the research that the findings of previous researchers are understood. The intention of the literature review is to examine the literature relevant to the research but not all literature (Linstead et al. 2004). The literature review aims to identify the existing state of knowledge regarding the implementation of ITIL and ITSM and the organisational change strategies that have been applied or might be applied. Providing a strategy for the literature review enables an evidence based direction that can be followed by other researchers (Kitchenham et al. 2009). The literature search applied to this research involved four steps. The steps included the definition of the search terms, the identification of the databases and the queries using the search terms, the criteria

filters for inclusion and exclusion and the validation that the selection is representative (Higgins & Green 2006).

An initial search of the literature using a single basic parameter of organisational change resulted in an overwhelming volume of academic articles. Included in the literature identified in the initial search were many articles relevant to organisational change but without specific relevance to the research that was about to be undertaken. Consistent with the view that the literature must address the requirements of the research questions, include the most significant theories of the research and the significant literature (Linstead et al. 2004), the search parameters documented in Table 2-1 were identified. All searches applying the parameters listed were conducted in EBSCOhost MegaFILE Complete. Further search requirements are listed in Table 2-2.

Table 2-1 Literature Review Parameters

Search Parameter	Literature Topic
organisational change + socio-technical	Organisational Change
organisational change + organisational development + socio-technical	
organisational change + planned change + socio-technical	
organisational development + socio-technical	
organisational development + planned change	
organisational change + planned change	
planned change + socio-technical	
change management + ERP	
change management + BPR	
change management + socio-technical	
change management + planned change	
organisational change + ERP implementation	
planned change + ERP + implementation	
organisational development + ERP + implementation	
organisational change + BPR + implementation	
planned change + BPR + implementation	
organisational development + BPR + implementation	
emergent change	
socio-technical + information systems	STS
socio-technical + implementation + information	
socio-technical + ERP	

Search Parameter	Literature Topic
socio-technical + BPR	
leavitt diamond	Leavitt Diamond
leavitt model	
IT Service Management	ITIL & ITSM
ITIL	
IT Service Management + ITIL	
IT Service Management or ITIL	
ERP + ITIL	ERP, BPR & ITIL
BPR + ITIL	

Table 2-2 presents the details of the database used for the literature review as well as further options and the date range.

Table 2-2 Literature Review Database and Options

EBSCOhost MegaFILE Complete	Using EBSCOhost databases: Academic Search Complete Computers & Applied Sciences Complete eBook Collection (EBSCOhost) Incorporating leading sources for academic journals from: ACM Portal IEEE Xplore Springer Link Decision Sciences Elsevier ScienceDirect Wiley InterScience
Options	Scholarly (Peer reviewed) Publications, Full Text, References Available
Date range	None specified

The search terms selected for the literature review focussed specifically on the core theories applied to the research. 'Organisational change' was the primary theory underpinning this research but a significant volume of literature exists for this field of research. The literature was narrowed to specific areas of relevance with the use of the additional parameters of 'socio-technical', 'organisational development' and 'planned change'. Further variations of these parameters were applied to ensure that the required literature was captured in the searches. 'ERP' and 'BPR' is relevant to

the literature review also and was included as was the overall theory of 'change management'. Further refinements were added following the initial searches. The volume of literature returned in the searches was still significant resulting in the addition of the search term of 'implementation' as this research was focussing on implementation strategies associated with organisational change. The searches were conducted again with the 'implementation' term to further narrow the area of research. The term of 'emergent change' was included at a later time when the literature review identified that this aspect of organisational change was relevant but was not sufficiently covered.

The STS areas of research were further narrowed with specific searches. STS as an organisational change theory had been well covered in the initial searches but further searches were undertaken in regards to the areas of ERP, BPR and information systems. These searches related STS to the specific areas of information technology and associated areas of research. The Leavitt Diamond literature was searched with the specific terms of 'leavitt diamond' and 'leavitt model'.

The other key topic for this research was ITSM and this included ITIL. The searches were conducted with the terms of 'IT Service Management' and 'ITIL' alone and jointly. These searches confirmed the lack of research into ITIL and how it has been implemented (Iden & Langeland 2010; Pollard & Cater-Steel 2009). The results were largely repetitive with the same articles consistently being identified in the results. The final terms applied were to identify if any research had included ERP and BPR with ITIL.

The literature was supplemented when necessary by following references used in the selected literature. In a small number of cases, relevant literature was used that was not identified in the searches but was referenced in articles identified by the literature review strategy. Text books were also used to supplement the material with particular reference to Burnes (2004a) and Linstead et al. (2004). It was noted during the literature review that the theories of organisational change and STS include similar material irrespective of the age of the publication. It could be considered that some of the organisational change material is older dating back to the 1970s but this was found to be either still consistent with more recent literature or the foundations of the current literature. In particular the theories of Lewin are still considered relevant as

are the STS articles of Bostrom, Mumford and others despite the time elapsed since their publication.

2.2.1 Updated Literature Review

The initial literature review for this research was completed in 2011. It was recognised that new literature was likely to be published during the period that the research was conducted and the results analysed and written. Consequently a further literature review was conducted prior to the completion of the thesis. It was not considered necessary to repeat the entire list parameters used in the initial literature review but necessary to include the core material of ITSM and ITIL and STS. The revised review included ITIL and ITSM to ensure recent publications in this field were included. A further search for STS related material that included ITIL, ITSM IT Service Management, Information Technology, IT and BPR and ERP was conducted. There were no additional publications for ITIL and ITSM or STS.

A systematic literature review of the implementation of ITSM was published in 2013. The article identified that in the two year period after the initial literature review for this research there had been no more publications found that included the strategies and methods for the implementation of ITSM and ITIL (Iden & Eikebrokk 2013).

The relevant material identified in the updated literature review has been included in this chapter and other appropriate locations throughout the thesis.

2.3 Organisational Change

The requirement in today's competitive environment for change within organisations is now an ever-present factor for all organisations. The ability of an organisation to successfully manage change has resulted in it becoming a necessary and primary capability (Burnes 2004b). Organisations have always had a requirement to change however since the nineteen eighties it has become a major requirement for all organisations regardless of whether they are in economically developed or developing countries (Erakovic & Powell 2006).

The occurrence of change in an organisation has been widely documented. Kim et al. (2011) noted that organisations have never had the requirement to change as fast and as often as they do now. Burnes (2004c) considered that change occurs more often, is larger and there is more uncertainty than previously and that change in organisations is now to be expected. Major change has been undertaken by a significant number of organisations in the last several years (Price & Chahal 2006). This requirement for change is affecting organisations regardless of the services provided or the goods produced (Kerber & Buono 2005) and it can be accepted that change will almost certainly be necessary (Price & Chahal 2006). It is the nature of organisations in this century that they will confront the need for change (Buono & Kerber 2010).

The speed that organisations need to respond to change by their competitors creates additional difficulties that leaders need to address (Pellettiere 2006). The size of the change will vary between organisations. In some cases it will be gradual and for other organisations it will be significant and very noticeable (Burnes 2004c). Regardless of the size of change, adapting to new systems and enhancements like this is an ongoing requirement and an organisation must be able to accomplish change to be successful. The ability of an organisation to successfully manage change has resulted in it becoming a necessary and primary capability (Burnes 2004d). Leaders and stakeholders have long believed that an organisation must change to operate more efficiently and more profitably (Price & Chahal 2006) and organisations must be able to adapt to changing circumstances to enable their continued existence (Linstead et al. 2004).

2.3.1 Drivers of Change

The literature provides many reasons for the requirement of organisations to change. Organisations are affected by forces from two sources, internal and external (Linstead et al. 2004; Price & Chahal 2006; Weck 2005). The external forces include social changes, economic conditions, technological advancements, market driven requirements the effect of legislative change and increased competition (Linstead et al. 2004; Price & Chahal 2006). The internal forces include staff issues such as absenteeism, morale and turnover, cost and performance concerns and failure to meet supplier and customer requirements (Linstead et al. 2004). The requirement to be

able to change in order to adjust to external and internal forces affects all organisations (Page et al. 2008). Organisations change because customer requirements change and the way they relate to other organisations changes. The way that companies conduct their business is becoming more complicated (Dassisti 2010).

Table 2-3 displays reasons for the need for changes as documented in various academic literatures. It is evident that there are many and varied reasons that organisations identify as the need to address change. The literature spans 1994 to 2011 but the reasons for change over that time frame remain quite consistent.

Table 2-3 Reasons for Change

	Clegg and Walsh (2004)	Buono and Kerber (2010)	Price and Chahal (2006)	Andreeva (2008)	Kim et al. (2011)	Ahearne et al. (2010)	Pellettiere (2006)	Kettinger et al. (1997)	Hempel and Martinsons (2009)	Reger et al. (1994)	Weck (2005)	Sackmann et al. (2009)	Thong et al. (2000)
Competitiveness	X	X	X	X	X	X	X			X	X	X	X
Technology	X	X	X	X	X		X	X		X	X	X	
Globalisation	X			X			X	X	X	X	X	X	
Markets	X	X	X								X		
Social conditions		X	X				X						
Customer needs	X						X					X	
Legislation						X	X				X		
Political conditions							X	X			X		
Customer expectations		X											X
Management practices					X						X		
Economic conditions		X									X		
Reduce costs	X												
Improve quality	X												
Reduced entry barriers	X												

	Clegg and Walsh (2004)	Buono and Kerber (2010)	Price and Chahal (2006)	Andreeva (2008)	Kim et al. (2011)	Ahearne et al. (2010)	Pellettiere (2006)	Kettinger et al. (1997)	Hempel and Martinsons (2009)	Reger et al. (1994)	Weck (2005)	Sackmann et al. (2009)	Thong et al. (2000)
Industry boundaries				X									
Mergers and acquisitions				X									
Return on capital					X								
Organisational effectiveness							X						
Financial performance							X						
Changing demographics							X						
Stakeholder demands							X						
Recession										X			

Table 2-3 shows that of the articles reviewed the two primary requirements for change are competitiveness and technology. Kerber and Buono (2005) reported that organisations need to not only react to competitive and technological forces but also to be proactive and anticipate them. Technology change has been identified as a force that is increasing competition between organisations. The impact of technology on the world is so significant that it is a primary reason for the need for change. An organisation making use of new technology, and in particular the Internet, produces opportunities for global markets (Shoham & Perry 2009). However, implementing technological change in an organisation can incur significant cost and effort. Even the move from one IT system to another IT system can be considered as change but may not be recognised as such (Lippert & Davis 2006). Organisations may have little choice but to pursue new technology. Many organisations globally are affected by technology change and this change affects the way in which work is performed. Organisations that do not address new technology may become uncompetitive (Shoham & Perry 2009). The effect of technology, and in particular information technology, is especially relevant because this study considers the organisational change factors required for the successful implementation of a management system for IT Services. Changes in technology have a significant impact on organisations. Advances in IT causes change to be required and is a change in itself (Shoham & Perry 2009).

Changes in technology certainly are significant due to the impact on organisations but there are other reasons for change. In response to the new technology, organisations are constantly making modifications to processes, products and finances. Organisations are required to modify processes, products and finances because of the changing requirements of the organisation itself and the organisations that they interact with (Pellettiere 2006).

Competitiveness and satisfying customer expectations is considered necessary (Price & Chahal 2006) as is innovation to remain competitive (McAdam & Galloway 2005). Organisations must adapt to changing market requirements to remain competitive (Ahearne et al. 2010) and the change to maintain competitiveness is ongoing and constant (Sackmann et al. 2009). However, the requirements of customers are constantly changing. This can result from financial or commercial

changes, new technologies being introduced or becoming available and the actions of competitors (Weck 2005).

Changing economic and political circumstances have pushed the requirement for transformation to increased importance (Erakovic & Powell 2006). The need for change could occur as part of an organisation's growth or by way of the ongoing development and adaptation that an organisation must progress through (Linstead et al. 2004). Globalisation has been identified as impacting upon the need for change. As economies develop organisations need to be able to adjust to the varying environment. The global effect requires organisations to be able to apply strategies that cross borders and countries (Hempel & Martinsons 2009).

Organisations apply change with varying expectations. The expectations may include reduced cost, workforce reduction, a change to an organisational culture or improved organisational performance (Linstead et al. 2004). Grover et al. (1995, p. 110) identified the 'goals of increased productivity, improved customer service, reduced cost, compressed cycle time and reduced defects'. However, it is not only organisations that change. People also change. Organisations are expending effort in developing their people to improve team performance and employee knowledge and capabilities (Bohl et al. 1996).

Three core requirements for organisations to change were identified by Freedman (1997). These requirements include solving a problem, utilising an opportunity and managing options. Problems could exist and need resolution or have not yet been identified. Organisations need to be able to locate opportunities and then change to exploit them. Changes could include new technology or new markets. Organisations may have multiple options from which to choose and manage to ensure the appropriate direction (Freedman 1997). Organisations have undertaken many different types of change, for example implementing quality management, changing the organisation's size, purchasing other organisations, changing the culture, implementing technology and amending internal processes (Pellettiere 2006). Four types of changes were proposed by Timmerman (2003): the way in which the organisation operates and manages itself, implementing new or changing technology, implementing new or changing products and the management of the staff.

2.3.2 Reactive and Proactive Change

It is possible to further clarify change as reactive or planned (Bartol et al. 2005). Reactive changes can be described as those that are made as a reaction to identified issues, concerns or prospects. In these types of changes it is difficult to respond effectively due to the need for reaction (Bartol et al. 2005). Essentially something has happened and is perceived to drive an organisation to take a course of action that includes change. Whereas a proactive change is described as planned change because it occurs when there is an expected issue, concern or prospect and the organisation has opportunity for preparation (Bartol et al. 2005; Greer & Ford 2009). Responding to internal or external forces is a reactive approach to change but there may be an identified need to be proactive by changing in anticipation of future demands (Price & Chahal 2006). Organisations need to be proactive to be able to be prepared for the need to change while reacting to the forces of competition (Grover et al. 1995). Strategic planning is a proactive change related activity (Medley & Akan 2008). It is considered that the majority of change is reactive rather than proactive (By 2005). Changes required as a consequence of external forces would be considered reactive changes (Oakland & Tanner 2007). The impact of politics and natural disasters are examples of external forces that can affect an organisation for which a change response may be only as a reaction. This view is not consistently shared amongst researchers and there is the suggestion that it is external forces that cause most planned change (Linstead et al. 2004). Anticipating the events that occur in the external environment can be very difficult (By 2005). Using the example of a quality management implementation it is suggested that changes in regards to internal forces are planned and are proactive (Greer & Ford 2009). Planning for change can occur as a proactive measure for such impacts as ageing machinery or workforce for example (Linstead et al. 2004). However, external forces can impact on internal circumstances and therefore drive change (Oakland & Tanner 2007). This would be a reaction rather than proactive even though it is based upon internal forces, affected by external forces. The global privatisation of public sector environments that occurred throughout the 1980s (Erakovic & Powell 2006) is an example of an external force that resulted in internal drivers (Andreeva 2008). The considered view is that it is more likely that organisations will be reacting to a circumstance, external or internal,

with change management rather than proactively managing change (Oakland & Tanner 2007).

There are multiple reasons for organisations to change and there are as many ways in which the organisation will change. Organisations that do not change will possibly decline (Page et al. 2008) whereas organisations that are prepared to change are more likely to maintain competitiveness and continue to operate successfully (Tan & Tan Ngoh 2005). Organisations need to prepare long term plans for change to ensure that they continue to operate in markets that become more competitive (Sackmann et al. 2009).

2.3.3 Types of Change

The literature on organisational change identifies numerous perspectives on the types of changes and their frequency. The different types of change vary in regards to how often change is considered necessary and the size of the change. The literature does not consistently use the same expressions to label the change types but there is some consistency in the underlying views. There is recognition that change may be required as a series of separate planned programs or that it is an ongoing activity driven by changing circumstances in an organisation. Additionally it is recognised that the size of change varies and that this may influence the type of change model confronting organisational requirements.

Szabla (2007) identified two types of organisational change referring to them as episodic or continuous. Episodic change is considered to be change that does not occur continuously but is planned and occurs when required. Continuous change is considered to be occurring as an ongoing requirement that varies as necessary. Burnes (2004d) considered that there are three types of organisational change. The three types of change are referred to as incremental, punctuated equilibrium and continuous transformation. Burnes (2004c) provided a view of the change models that there has been a progression over time with new change models being identified. In the period up to the latter stages of the 1970s, the primary nature of change had been considered to be incremental. The punctuated equilibrium and continuous transformation models of change developed during the 1980s. Similar to Szabla (2007), Burnes (2004c) recognised that organisational change may take place one

change at a time. Szabla (2007) refers to this as episodic whereas Burnes (2004c) refers to it as incremental. Incremental changes could be small and barely identified as having occurred (Burnes 2004c). Incremental change occurs when organisations separate their change programs into components and manage them individually with a goal for each one (By 2005). The incremental model of change is displayed in Figure 2-2.
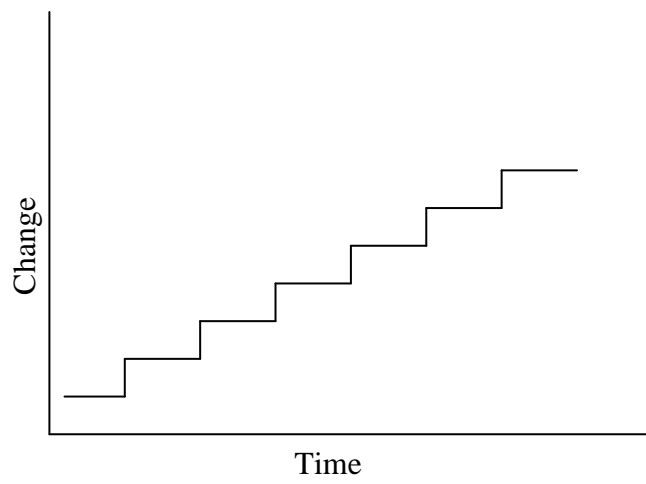
Figure 2-2 Incremental Change

Source: Burnes (2004a, p. 351)

During the 1980s two new models of organisational change were identified. The punctuated equilibrium and continuous transformation models emerged during this period (Burnes 2004c). Punctuated equilibrium refers to a change model that considers that there are extended durations when no change takes place followed by short but significant periods of change (Burnes 2004c). It had been identified in research that organisations will have periods in which incremental change takes place but that there will be times when there is a need for fast significant change (Burnes 2004c). The punctuated equilibrium model of change is displayed in Figure 2-3.
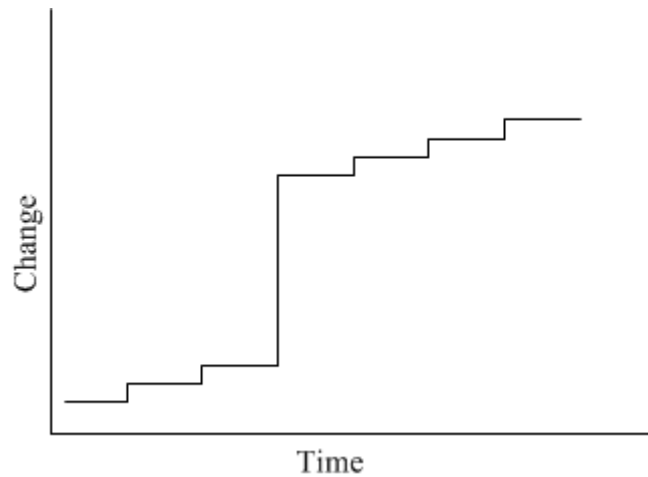
Figure 2-3 Punctuated Equilibrium

Source: Burnes (2004a, p. 352)

The continuous transformational model of change disputes that organisations will change incrementally or as punctuated equilibrium models identify. The view is held by supporters of the continuous model that organisations are constantly changing and must do so to remain competitive. Industries such as technology and sales are recognised as requiring constant change to be able survive against the competition that is changing (Burnes 2004c). The continuous transformational model of change is displayed in Figure 2-4.
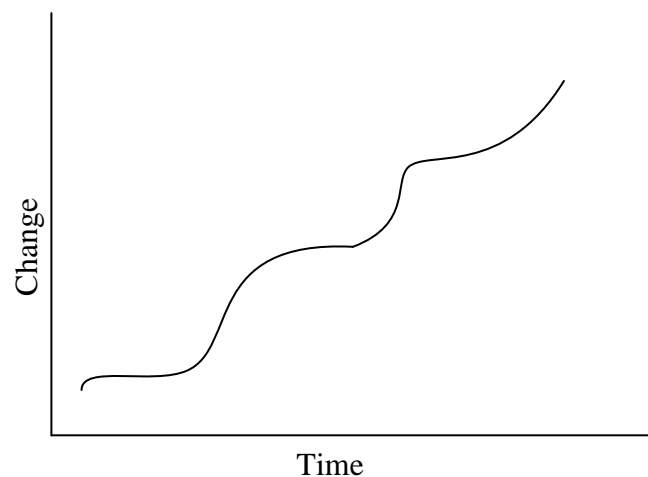
Figure 2-4 Continuous Transformation Change

Source: Burnes (2004a, p. 353)

Continuous change can become a regular component of an organisation's functions and tasks as it responds to forces upon it. Continuous change occurs as an organisation tries to keep up to the rate of change affecting it. A view exists that this is the preferred way for an organisation to approach change (By 2005). Although it is considered that continuous change can be costly as an ongoing exercise and that change should be discontinuous. This would entail larger initiatives but that they would separate and include periods of stabilisation. There is an argument that continuous and incremental should be viewed as the same category of change but with the added concern that this disables the capacity to separate smaller distinct change from organisation-wide change (By 2005).

Figure 2-5 displays four types of changes. It is considered necessary that to be able to implement change, leaders of change need to be aware of the different types of change that exist. In that way they can consider strategies to plan for a successful program (Price & Chahal 2006).
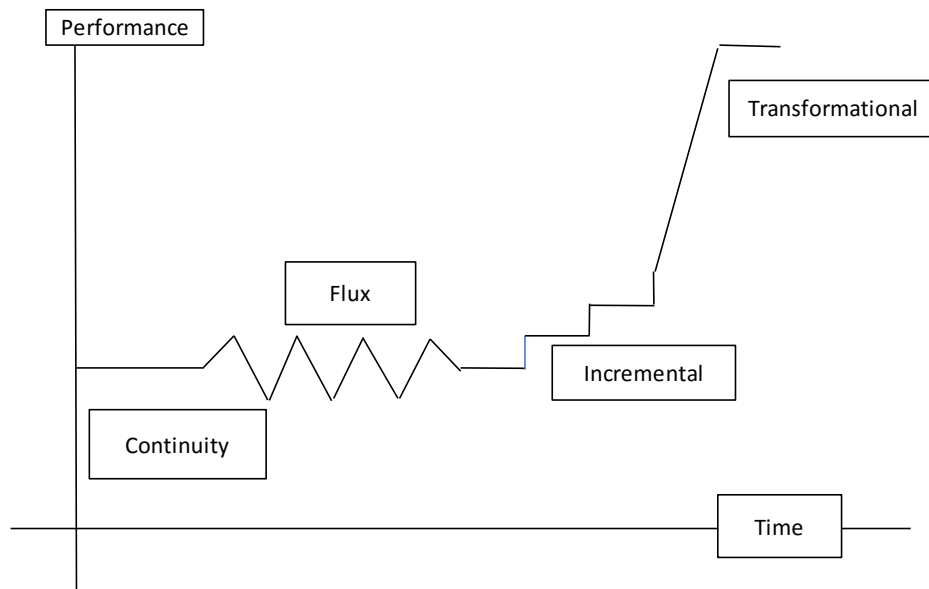
Figure 2-5 Types of Strategic Change

Source: Price and Chahal (2006, p. 239)

Burnes (2004b) noted that the models of change of incremental, punctuated equilibrium and continuous change are all found in organisations. No specific model has presented itself as the primary model to be followed or adapted.

Three primary types of change were described by Price and Chahal (2006). Developmental change refers to increasing or improving the existing state. Transitional change involves the replacement of the existing state with a different required state. Transformational change is a significant change which has major impacts on the direction of the organisation (Price & Chahal 2006).

Transformational change is a type of change referred to by numerous authors of organisational change literature. Transformational change has also been referred to as radical change (Mainstone & Schroeder 1999). Transformational change requires an organisation to relinquish the way in which it currently operates or does things and implement new ways. Cultural change is considered an outcome of transformational change (Wolf 2011). This type of change can be implemented as change occurring quickly or as a long process of incremental change (Burnes 2004c). The incidence of transformational change has increased as organisations operate in increasingly unsettled situations but it brings with it a substantial potential for not achieving its objectives (Mainstone & Schroeder 1999).

Three types of change applied to organisations: incremental, revolutionary and tectonic were identified by Reger et al. (1994). They suggested that incremental change does not enable an organisation to maintain the rate of change that organisations need to apply. Consequently organisations choose a revolutionary change type. The revolutionary approach requires a total change in the organisation affecting its culture and the way in which it operates. This is also referred to a transformational change by other researchers as discussed previously. Yet Reger et al. (1994) recognised that this type of change often fails and is affected by resistance from staff. Reger et al. (1994) proposed a moderate type of change that is significant enough to meet the needs of the organisation but without the impact to organisational culture and staff. The moderate change is referred to as tectonic change. Table 2-4 displays types of change and the circumstances in which they are applied.

Table 2-4 Comparison of Different Change Modes

Environmental Conditions	Change Process	Change Magnitude	Change Objective (Organisational Identity)
Stable	Incremental	Minor fine-tuning or adjustment	No change or piecemeal changes in organisational identity
Turbulent	Tectonic	Moderate	Significant changes building on existing elements of organisational identity
Crisis	Revolutionary	Massive	Complete replacement of organisational identity

Source: Adapted from Reger et al. (1994)

Revolutionary and evolutionary types of change are referred to by a number of scholars. Reger et al. (1994) referred to revolutionary change in similar contexts to other authors referring to transformational change. Stoddard and Jarvenpaa (1995) wrote of revolutionary and evolutionary change as processes or strategies to support an organisation's direction for change. Revolutionary change is considered to be change that affects the whole organisation from the way in which it performs work to its principles. Evolutionary change is described as a process that brings about change by working with the existing organisation practices, skills and principles. Evolutionary and revolutionary changes are associated with types of change including incremental and radical (Stoddard & Jarvenpaa 1995). Table 2-5 displays the association between the types of changes.

Table 2-5 Association between Types of Change

		Process	
		Evolutionary	Revolutionary
Outcome	Incremental	Incremental improvement	Little benefit for risk and pain
	Radical	Continuous incremental improvement over a long period	Radical change in a short period of time

Source: Stoddard and Jarvenpaa (1995, p. 86)

Evolutionary change considers that change should be incremental and over a time that is best suited for the organisation. Revolutionary change should be conducted more quickly and because of the significance of the change to the organisation there is little value in an incremental approach (Stoddard & Jarvenpaa 1995).

In presenting information regarding types of change the added complexity is that different views and definitions are widely distributed throughout the literature.

There are described types of change that include crisis change for reaction driven change, chosen change for proactive change, developmental change for improving existing practices and transitional change for significantly changing current practices (Price & Chahal 2006). In summary, prior work reported in the literature contains many different views in regards to types of change, frequency of change and magnitude of change.

2.3.4 Change Issues

Conducting change in organisations is demanding and many examples of failures have been documented (Reger et al. 1994). Despite the importance of change affecting organisations and the amount of change being undertaken, the literature and research indicates that many change initiatives fail or do not meet expectations. There are multiple studies and articles that provide statistics or estimates regarding the failure rate of change. Buono and Kerber (2010) referred to a global business study in which approximately only 33 per cent of change programs were considered to have been a success. Other studies provide varying rates of failure. Kim et al. (2011) referred to studies identifying the meeting of expectations at 30 to 40 per cent and Charles and Dawson (2011) refer to a study by Beer and Norhria (1998) that estimated that approximately 70 per cent of programs are unsuccessful. This claim is consistent with the findings of Nakhoda et al. (2011) that more than 70 per cent of change programs are not successful.

The literature further identifies that multiple industries are affected by the failure rates of change programs. Although there are some successful change programs in the manufacturing industries a significant number have failed. The study by Clegg and Walsh (2004) of almost 900 manufacturing organisations in four countries and with multiple management styles and for a range of very different types of change programs indicated that failure is wide spread. ERP is an organisational wide Information Technology application that consolidates business functions such as finance and human resource management. It has been estimated that approximately 50 per cent of ERP projects do not meet expectations and between 20 and 50 per cent of implementations are not completed (Charles & Dawson 2011). The failure of change initiatives is not a new occurrence. Clemons et al. (1995) reported that many

large organisations were re-engineering business processes or intended to do so yet failure rates were very high and many initiatives were not being completed.

There have been many attempts to improve the performance of change programs in organisations however they have frequently been unsuccessful (Pellettiere 2006). It has often been believed that disappointing change programs can be addressed with 'quick fix' solutions. Actions such as these generally are unsuccessful but there has been a growing incidence of new types of fixes and change programs that guarantee improved change performance (Reger et al. 1994). A significant amount of literature documenting the best ways to implement change has been produced by academics and non-academics without positively affecting the rate of failure (Herold et al. 2007). The ability of an organisation to manage change is particularly important. Without the ability to change, organisations could encounter major problems (Nakhoda et al. 2011).

The effect on organisations of the failure of change programs can be significant. A study of the failure of major changes in the IT industry identified that it is not just the loss of the expenditure of the program costs but also the cost to the organisation of not being competitive (Clemons et al. 1995). There is a great deal of literature identifying how difficult it is to implement large changes (Charles & Dawson 2011) and recent studies indicate that the rate of changes not meeting expectations is increasing (Buono & Kerber 2010).

The literature provides many reasons for the failure of change in organisations (Szabla 2007). Reasons provided for change failure or for not meeting expectations include insufficient resources, mistakes by managers (Kim et al. 2011), inadequate training and poor communication (Price & Chahal 2006), conflict caused by divided change programs (Clegg & Walsh 2004) and conflict between change participants (Szabla 2007). Resistance to change is also identified as a reason for change failure (Kim et al. 2011) and considered to be the primary cause (Szabla 2007). Lippert and Davis (2006) documented that resistance to change is the primary cause of the failure of information technology change programs.

Research into resistance to change has been conducted for more than sixty years. People in an organisation are not necessarily motivated to change or do not perceive

the benefits to the organisation as being of interest to them (Yrontis et al. 2010). Many staff do not like change; they would like their work to stay as it is. They do not understand the need for the change and they lack interest in the change. Organisational change may be perceived by staff as something forced upon them by their managers (Harley et al. 2006). Staff affected by change may perceive it to be harmful to them and to the teams they belong to (Price & Chahal 2006). Change in an organisation creates an insecurity regarding the future of and the recognition for an employee. The employee may not be aware of the reasons why the change is being introduced. It is necessary that if change is to be applied then the factors affecting people are considered. People and organisations respond to change in different ways and managers need to recognise this and know who will be affected in negative or positive ways (Price & Chahal 2006). Transformational change will be confronted with resistance from those affected yet incremental change may not occur quickly enough to enable an organisation to maintain a competitive position (Reger et al. 1994).

There is a need for organisations to be able to operate more efficiently and improve the quality of the service to customers. This is intended to result in improved results for the organisation. Managing change is a strategy that has been adopted to achieve these goals (Chen & Nath 2008). A change management strategy is extremely important to the success of the change. Resistance to change and other negative impacts can be considered as the outcomes of change programs that were not adequately delivered (Harley et al. 2006). Management should identify and address resistance to change so that they achieve the desired outcomes from change (Price & Chahal 2006). Managing change uses tactics that may vary from one change to another but with the purpose of overcoming the resistance that will be encountered (Guha et al. 1997).

2.3.5 Managing Change

The ability of an organisation to manage change is extremely important if the organisation is to avoid the difficulties encountered by those who are not able to manage change (Nakhoda et al. 2011). A consequence of the need for organisations to be able to maintain their existence in unstable modern environments has been the development of the management of organisational change. Organisations look to

managing change as a desired strategy to ensure that they are able to meet the needs of the customers and achieve the required organisational results (Chen & Nath 2008). Change is so important to an organisation that it is a constant characteristic of the organisation at multiple levels. Consequently, change management has become a strategy for organisations (By 2005).

Organisational change management is the ongoing procedure of reviewing and realigning the direction in which an organisation is progressing such that it is capable of addressing the changing circumstances, internal and external, that affect the organisation (By 2005). A change can also be described as the adaptation or adjustment of the separate and fundamental components of an organisation (Beck et al. 2008). A further qualification of the definition of change can be difficult because it is essentially of any extent, category or variety and it will affect every organisation that exists in any industry (By 2005). Change management is a varied and complex process (Grover et al. 1995). The importance of people within the process of organisational change management is recognised, as the support provided to the people affected by change (Grabski et al. 2011) assists in their adoption of the changes (Shoham & Perry 2009). In regards to ERP, change management includes the process, tools and techniques to meet the business requirements of change with management of the people aspects (Al-Turki 2011). Organisational change management assists the change process by applying strategies, structures and processes. Supporting the people of the organisation is an important component of ensuring the success of the change (Jimmieson et al. 2009).

Organisational change management theory has advanced through stages over time. Distinct stages have been recognised including the Fordist revolution, the quality movement, humanistic developments and organisational experiments. The Fordist revolution stage recognises the period of organisational history from the industrial revolution through to the Second World War. The United States of America underwent great change as it industrialised but poor performance by workers continued as an issue into the later parts of the 19th century. Consequently a growing numbers of large companies were unable to achieve their expectations. It was during this period that the development of the scientific management movement and the Ford production line system occurred (Fangqi & Rickards 2007). The scientific

method of Frederick Taylor sought to resolve hostility between management and workers by applying scientific theory to achieve an appropriate wage for the work performed. The consideration of this theory was that workers were machines that were motivated by money and that poor performers should be dismissed (Burnes 2009). During this time, organisational theory and research into management developed (Fangqi & Rickards 2007).

During the 1930s new theories were developed regarding people and work. The work by Elton Mayo and others began to create an awareness that workers were not machines driven by money but had human characteristics and emotions. The social need was being recognised and that organisations are social environments (Burnes 2009). The total quality (TQ) movement generated interest in the United States after the Second World War but only after Japanese firms had significant success. The TQ theory had developed in the United States but developed further in Japan after the war and with the support of the occupying allies. The success of the programs in Japan resulted in American organisations adopting quality programs (Fangqi & Rickards 2007).

The second half of the twentieth century is referred to as the humanistic development stage. The research by Kurt Lewin and the development of the planned change approach recognised the influence of the human aspects of work. This period included the development of the STS and organisational development approaches (Fangqi & Rickards 2007). Kurt Lewin was the first researcher to provide a change approach based upon theory and which was feasible and with principles (Burnes 2009). Kurt Lewin's approaches to change management were considered the primary theory for the period of the 1950s to the 1980s. This was the period in which change was considered to be incremental. Change was believed to occur within parts only of an organisation and one at a time to resolve a single issue. Interest in the work of Lewin persisted and further advanced into organisational development and to include enterprise wide change (Burnes 2004c).

The later stage of the nineteenth and early part of the twentieth centuries has seen further development. New ideas emerged including terms such as benchmarks, visions, outsourcing, re-engineering, value add and organisational learning (Fangqi & Rickards 2007). Beginning in the 1970s the incremental model of change was

being replaced with new views. The emergent approach to change, with the advancement of the new theories including punctuated equilibrium and continuous transformation models, began to replace the planned change model (Burnes 2004a). A change model requirement is a recognition that considering only one approach to change, whether planned or emergent, is not the best direction to take (Burnes 2004c). Over time the change theories have moved from products and costs to include human factors and the development of knowledge (Fangqi & Rickards 2007).

Process is a key component of organisational change management. Change management is frequently viewed in the literature as either a process or as supporting the process of change. Change management is recognised for its relationship with the human factor of change. The definitions and descriptions quoted above frequently note the requirement of change management to support people affected by change or to assist people involved in change. Change management has been recognised in regards to ERP implementations as ensuring that people affected by the change are communicated with in regards to the impact to them (Okrent & Vokurka 2004). Resistance to change has been identified as a reason for change failure (Kim et al. 2011) and the management of change is applied to overcome the resistance (Guha et al. 1997). Human based outcomes are identified as expected outcomes of the management of change. This includes employee training, documentation and communication to ensure that staff know the new practices and do not use old practices (Shoham & Perry 2009).

The preparations for change by an organisation are considered critical to successful outcomes. Ensuring that an organisation and the staff are ready for the change involves the staff recognising the benefits of the change with the consequence that they will be supportive (Jimmieson et al. 2009). A focus on technical aspects of changes without consideration for change management has been attributed as a cause of many ERP implementation failures. A lack of change management can result in a failure of the ERP implementation even if the technical aspects are adequate. Managing change in organisations requires an inclusion of social and cultural aspects (Al-Mashari 2003). Managing large changes can be difficult (Charles & Dawson

2011) and the failure to apply change management appropriately has been identified as a factor in change failure (Huq et al. 2006).

The requirement for managing change has been recognised by organisations. Change is expected as organisations contend with new technology and the demands of remaining competitive (Kerber & Buono 2005). In response to the demands it is now common for consulting firms to include change management as a service. The volume of literature available continues to increase and post graduate business course such as Masters of Business Administration include Change Management. Organisations have improved their change management skills and in particular their capacity to manage the human response to change (Kerber & Buono 2005). Despite the significant amount of research that has been conducted and the management focus applied to change management strategies the success of organisational change remains difficult to attain (Clegg & Walsh 2004).

2.3.6 Change Management Theory

Although the requirement for organisational change has never been greater (By 2005) and it has been estimated that approximately 50 per cent of changes undertaken do not meet expectations (Charles & Dawson 2011), the study of the management of organisational change is not a recent development. Research into organisational change has produced a number of theories and change management models. In this discussion primary theories of change management associated with the research will be presented. The change management theories include Organisational Development, Planned Change and Socio-technical Systems. These change management theories are core to the study undertaken. Emergent change is not core to the research undertaken however the Kotter approach to organisational change management is discussed by (Burnes 2004a) as emergent change. The Kotter model of organisational change management is referred to in the Service Transition and Continual Service Improvement volumes of the official ITIL 2011 publications. The Kotter model is proposed in Axelos ITIL literature as a model that can be applied to organisational change management (Axelos 2011a, 2011b). References to Kotter are also found in previous versions of ITIL in §5.2 Managing Organisation and Stakeholder Change (2007). Due to the referral to Kotter by the ITIL publishers

as a suitable organisational change management model it will be included in this literature review and research.

The study of change management began during the 1940s. The initial theory that is now referred to as planned change was developed by Kurt Lewin. Lewin's planned change model included three steps of unfreezing, moving and refreezing (Andreeva 2008). For many years until the 1980s the primary change management theory was planned change (Burnes 2004c). In recent years a new change theory has been developed. The model is referred to as emergent theory (Andreeva 2008). The two theories of planned and emergent change are now both widely agreed as the primary theories of organisational change (Burnes 2004c). Table 2-6 lists the four widely recognised approaches to change and indicates their use by three leading change management scholars. Planned and emergent change are the dominant change management approaches (By 2005).

Table 2-6 Change Management Approaches

Type of Change	Burnes (1996)	Dunphy and Stace (1993)	Senior (2002)
Planned	X		X
Emergent	X		X
Contingency		X	
Choice	X		

Source: By (2005, p. 373)

Emergent change comprises the ongoing adjustments and adaptions that result in change when there was not a specific intention to change (Burnes 2004c). STS theory can be traced back to Kurt Lewin. STS theory includes a greater involvement by staff in the changes of an organisation. The STS theory was advanced further by the Tavistock Institute during the 1940s and evolved into different systems and related to organisational development (Fangqi & Rickards 2007).

The organisational development theory was derived from the planned change model of Lewin (Andreeva 2008). Organisational development progressed planned change to a theory that addressed human related issues associated with change. Organisational development is still planned change but it focuses on approaches involving people and teams in order to improve performance (Burnes 2009).

Although there is a significant amount of literature that describes the importance of change and documents the various approaches there is little research support for the approaches (By 2005). However, the literature identifies two basic approaches to change: planned change which is formal and proactive; and emergent change which is informal and ad-hoc (Weldon 2000). Change however is complex and often involves parts of both planned and emergent change (Grover et al. 1995). A change that involves both emergent and planned change components may result in one having a greater influence than the other (Johnson-Cramer et al. 2003). There is not an acceptance amongst researchers as to the most appropriate approach to change, planned or emergent (Bamford 2006). There is the view that there is a place for each approach (Shanley 2007).

2.3.6.1 Organisational Development

Organisational development has been defined as the management of the organisation's culture through long term programs of improvement. The intention is to improve the effectiveness of the organisation and to extend the capabilities of the staff. This is achieved by a planned approach to change (Harvey & Brown 2006). Organisational development is defined by Warzynski (2005, p. 338) as 'a planned change process in which people, cultures, work processes, structures and technologies are developed, integrated, and aligned to strengthen an organisation's economic performance or increase its capacity to adapt and respond effectively to the environment in which it operates'. The central consideration of organisational development is that it recognises the representative human side of change in both process and leadership (Burnes & By 2012). Numerous organisational development practices exist but they have in common an overall organisation view (Harvey & Brown 2006). Organisational development consists of values and beliefs that reflect the people aspect of the organisation. Various proposals for the beliefs have been created but their primary consistency is that they provide for human considerations and the ability of the human elements to provide values and commitment to the organisation (Burnes 2009).

Organisational development has been viewed as the answer to the issues of organisational change by focussing on the participation and inclusion of people (Kerber & Buono 2005). Organisational development is considered by Burnes (2009,

p. 368) to be about 'people and organisations and people in organisations and how they function. Organisational development is also about planned change: that is, getting individuals, teams and organisations to function better'. Sminia and Van Nistelrooij (2006, p. 100) described organisational development stating that a 'bottom up approach with the full participation and active involvement of all staff is seen as essential for generating commitment and ensuring the strategic reorientation actually is realised'.

The appearance of organisational development commenced during the 1950s and has developed into a variety of interrelated theories that can assist with resolution of the people problems that organisations need to address (Burnes 2009). In the time since the appearance of organisational development it has become recognised as a significant change theory (van Aken 2007). The source of the organisational development theory is found in the work of Kurt Lewin. Lewin's initial intention was to identify methods for conducting change while solving the issues of conflict between people. Lewin adapted this concept for organisations with the result that a planned approach to change would enable improvements to the social sides of the organisation (Burnes & By 2012). Lewin wanted to include groups and teams in change with the view that this would improve the performance of the organisation. Lewin's emphasis was on the inclusion of human aspects of change (Medley & Akan 2008). Partnership between managers, those affected by change, the change driver and the organisation is core to Lewin's methods Lewin's human approach was the basis for the organisational development field (Burnes & By 2012).

Organisational development was the primary planned change approach from the time of Lewin until the 1980s (Medley & Akan 2008). Organisational development was further advanced with the development of the human aspects of change (Burnes & By 2012). Over time the scope of organisational development has expanded. Initially organisational development was mainly focused on individuals and teams. However, this grew to include large change (Chapman 2002). Organisational development moved from being an approach to team-based change to organisation-wide change and has become a normal part of organisations (Burnes 2009). The Burke-Litwin Model, as shown in Figure 2-6, is an organisational

development theoretical model. The model displays the relationships between factors of an organisation (Marks & Sun 2007). The model displays two types of change.

This includes change in which individual parts only of the organisation may be affected, particularly the structure, management practices and systems. This is referred to as transactional change (Marks & Sun 2007). Essentially the core of the organisation remains unchanged (Pellettiere 2006). The diagram also displays transformational change in which the nature of the organisation is affected. This includes the organisational culture, the mission and strategy and the organisation's leadership (Marks & Sun 2007). The organisation will be significantly different as a result of this type of change (Pellettiere 2006). The Burke-Litwin model has been used to produce questionnaires for the purpose of collecting data relative to a possible change (Linstead et al. 2004).
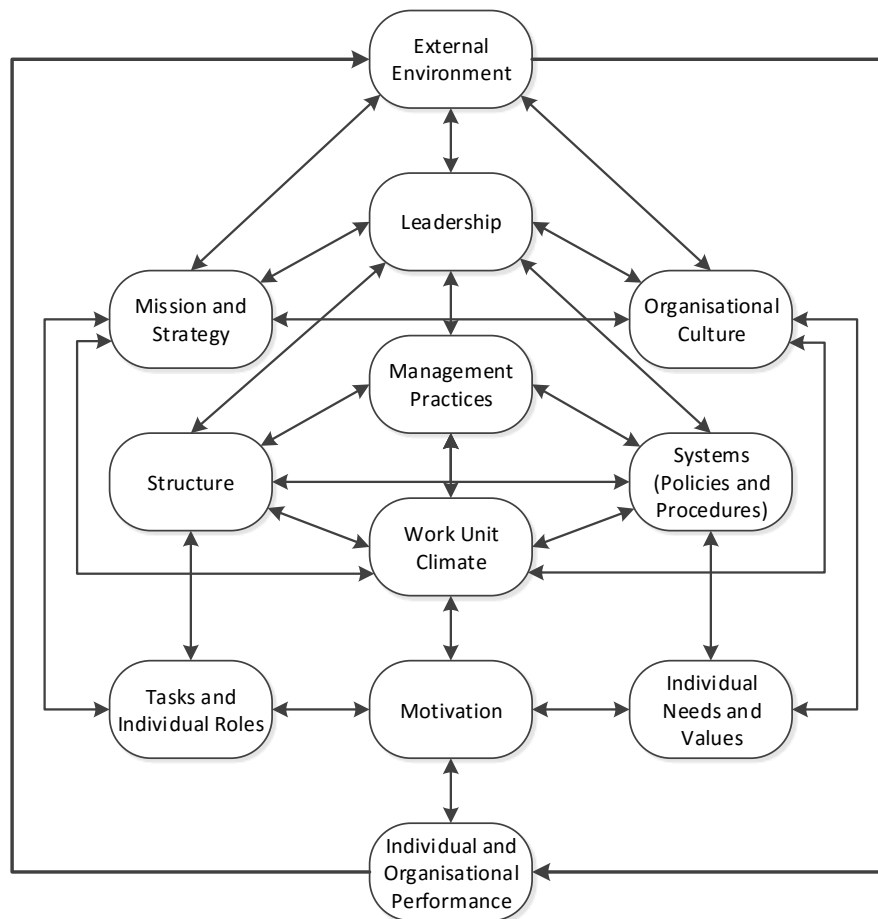
Figure 2-6 Burke-Litwin Model of Organisational Development

Source: Linstead et al. (2004, p. 438)

The advancement of organisational development resulted in the development of values and approaches. Burnes and By (2012, p. 243) documented four core values of organisational development as described in the 1970s:

- 'The belief that needs and aspirations of human beings provide the prime reasons for the existence of organisations in society
- Change agents believe that organisational prioritisation is a legitimate part of organisational culture
- Change agents are committed to increased organisational effectiveness
- OD places a high value on the democratisation of organisations through power equalisation'.

Burnes and By (2012, p. 243) listed five approaches that were described in the 1990s:

- 'Empowering employees to act
- Creating openness in communication
- Facilitating ownership of the change process and its outcomes
- The promotion of a culture of collaboration
- The promotion of continuous learning. In order to remain relevant to the needs of organisations'.

Table 2-7 presents the primary characteristics of organisational development described by Harvey and Brown (2006).

Table 2-7 Primary Characteristics of Organisational Development

Characteristics	Focal Area
Planned change	Change is planned by managers to achieve goals
Collaborative approach	Involves collaborative approach and involvement
Performance orientation	Emphasis on ways to improve and enhance performance
Humanistic orientation	Emphasis upon increased opportunity and use of human potential
Systems approach	Relationship among elements and excellence
Scientific method	Scientific approaches supplement practical experience

Source: Harvey and Brown (2006)

Organisational development has key considerations in regards to the change management theories of planned change and socio-technical systems relevant to this study. Planned change developed from the organisational development theories based upon the research of Kurt Lewin (Medley & Akan 2008) and STS is an organisational development practice intended to improve organisational efficiency (Grover et al. 1995). In particular an STS approach has been frequently used for change involving information technology (Warzynski 2005). Organisational development has progressed since the 1970s and is now focused on issues that affect whole organisations including STS but has also become the focal point for Lewin's planned change theory (Burnes 2004b).

In recent years there has been increasing concern regarding whether or not organisational development is still important or even sustainable as an academic field of study. Concern has been raised regarding the capability of organisational development to produce the desired results, that it is not aligned with business requirements and a reduction in organisational development commitment to planned change (van Aken 2007). Organisational development is now considered appropriate for change that affects whole organisations. However, this diminishes the ability for the inclusion of people and therefore loses its direction in terms of human involvement (Burnes & By 2012). The more that organisational development is associated with enterprise wide change; the more difficult it is to remain focused on the human and participative side of that change. A view has developed that organisational development no longer has the focus that it once did (Burnes 2009). Organisational development researchers provide varying descriptions of the current state of organisational development. The descriptions of organisational development vary significantly including that it has changed into a more current practice and should be renamed, that it is now reaching its end and that it is inappropriate because it focuses too much on the human side (Levasseur 2010). Organisational development was the primary change management theory in the field of organisational change until the 1980s. More recent approaches including the emergent approach have reduced the significance of organisational development (Burnes & By 2012).

A study by Clegg and Walsh (2004) of 72 organisational development change programs produced mixed results in regards to the success or effectiveness of the organisational development approach. The initiatives covered a variety of changes that included organisational structures and rewards, social aspects, work place design and technology. While 38 per cent identified a positive outcome, the majority (53 per cent) indicated that despite the organisational development approach there was no change, and nine per cent identified that the result was a negative outcome. It is possible that the results suggest that organisations are not able to effectively implement change (Clegg & Walsh 2004). The claims have also been made that the unnecessary involvement of people in organisational development-based change has resulted in a waste of resources and resulted in a situation where the change has failed, regardless of the inclusion of people (Kerber & Buono 2005).

2.3.6.2 Planned Change

Planned change is a widespread approach to organisational change which is predominantly driven from the leadership of the organisation (Buono & Kerber 2010). Planned change describes the purposeful progression of activities that shift an organisation to a required condition meeting specific objectives (Linstead et al. 2004). Planned change has also been described as the intentional moving of the organisation from the current state to a preferred state to achieve set goals (Ford & Greer 2005a; Hempel & Martinsons 2009). Planned change occurs when an organisation applies a set process and takes appropriate actions to change the organisation in terms of the way in which it operates, conditions in the organisation and the organisation's structure (Ford & Greer 2005a). The intention is that an organisation identifies the requirement for change and initiates the appropriate actions before the need for the change actually occurs (Linstead et al. 2004). Planned change provides a direction that will include the primary participants in the preparation and the execution of the change (Buono & Kerber 2010).

Organisational change can vary in difficulty, and it is considered that the importance of applying a planned change method increases as the perceived scale and difficulty of the change increases. This is particularly important if the participants in the change are unable to agree on the appropriate actions that are best for the various sections of the organisation. Increasing the success rate of planned change is

important with research indicating at least 50 per cent fail (Szabla 2007). Such is the importance of successfully applying change that it in some cases it may be crucial to the ongoing viability of the organisation (Lewis 2000). Support for the change by the staff of an organisation is considered to be essential to the success of the change (Kim et al. 2011). A planned change approach enables the inclusion of the necessary participants during the planning thereby possibly increasing the support for the change (Kerber & Buono 2005). Resistance to change by staff has been cited as the primary barrier to the success of the change (Szabla 2007). Applying a planned change approach increases the opportunity for the success of the change. Success may be dependent upon the engagement and inclusion of those that participate in the change (Kerber & Buono 2005). Research into change failure identifies that poor communication of the change vision and negativity by those involved are major factors associated with change failure. Resistance to change could result in lost productivity, conflict and doubt about achieving the change objectives (Lewis 2000). A planned change approach that involves stakeholders and stated activities seeks to reduce the resistance to change and avoid a reduction in organisational output (Buono & Kerber 2010). Consequently it is very important that managers who are required to apply change understand planned change practices (Ford & Greer 2005a).

Kurt Lewin

The planned change theory had originated in organisational development based on theories developed by Kurt Lewin (Medley & Akan 2008). There is a significant amount of literature available for managers advising the most appropriate ways to deliver organisational change. Much of the literature refers to the planned change approach developed by Lewin (Andreeva 2008). The planned change theory developed by Lewin has been the primary change model for more than fifty years (Bamford & Forrester 2003). There have been many change models developed but the Lewin planned change model is the most widely known (Greer & Ford 2009). Kurt Lewin was a Jewish behavioural scientist in anti-Semitic pre-war Germany who moved to the United States of America in about 1933. Lewin was employed at Cornell University and later the University of Iowa. Lewin undertook research programs that often involved social conflict. The research included conflict at work

and in the home and families, racism, discrimination, prejudice as well as motivation and performance amongst others. After the war Lewin established a centre that researched group behaviour. Lewin developed the planned approach to change as an outcome of his research (Burnes 2004c).

Lewin's approach to planned change is comprised of four individual theories. The four theories are Field Theory, Group Dynamics, Action Research and the 3-Step change model (Burnes 2009). Lewin considered his theories as a combined and interacting model. Lewin did not consider these to be separate theories, but rather that they should be used in conjunction with each other (Burnes 2004b). Lewin believed that the efficiency and success of an organisation would be improved if the people and group components were addressed (Medley & Akan 2008). Lewin's change approach was intended to solve issues involving conflict between people. The focus of Lewin's planned change model was the human side of change and partnership between managers and those affected by change (Burnes & By 2012). Lewin believed that it was necessary to understand group behaviour and individual behaviour inside the group within the context of the environment in which they existed. Understanding the way in which groups worked would enable an ability to make change. This is referred to as the Field Theory. Group Dynamics refers to the relevance of the group as a contributor to the behaviour of the members of the group. Lewin saw that if the group was understood it would provide the ability to implement change to a preferred outcome (Burnes 2004b). Action Research is a process that scrutinises a condition and enables a selection of the best ways to change it (Burnes 2004b; Medley & Akan 2008). Action research to be successful should occur at a group perspective but that all stakeholders need to be involved. The process must enable all parties to contribute and be included (Burnes 2004b).

Lewin's Three Step Change Model

Lewin created the 3–Step Model to overcome concerns regarding short term change impacts and to ensure that they were ongoing. The 3-Step model is intended for use in conjunction with Lewin's other theories in order to implement successful planned change (Burnes 2004b).

The 3-Step model has become recognised as the model for successfully implementing change and was commonly referred to as a practice for managers to implement change (Andreeva 2008). The three steps include unfreezing, moving and refreezing (Andreeva 2008; Buono & Kerber 2010; Burnes 2004b; Kerber & Buono 2005). Unfreezing refers to the undermining and discarding of old behaviours (Burnes 2004b; Linstead et al. 2004) by communicating that current behaviours are not as effective as required (Zand & Sorensen 1975). The unfreezing establishes an environment in which the change leaders and participants identify the requirement for change and are subsequently driven to change. They are inspired to look to new ways and perspectives. Actions by managers can encourage those affected by change to be open to change and thereby reduce the barriers of resistance (Medley & Akan 2008). It can be expected that the unfreezing phase will result in a stable environment being pushed into a state of instability and that change participants will be required to forget existing practices and question new requirements. This may correlate with a rapid decline in performance (Ahearne et al. 2010).

Moving refers to the transitioning to a new behaviour by identification of and action of a solution (Linstead et al. 2004; Zand & Sorensen 1975). During the moving phase the organisation introduces the new skills, ways of working, technology or organisational structure. The affected staff are supported through the change as they acquire the necessary methods and perspectives (Medley & Akan 2008). The moving phase can be considered as more gradual than the shock of the unfreezing phase. In the moving phase, the change participants move towards the adjusted environment. Change participants will adapt to the new requirements and performance will begin to recover. Learning requirements will diminish over time as the new processes and deliverables become more familiar (Ahearne et al. 2010).

Freezing is the fortification of the behaviour as the norm (Burnes 2004b; Linstead et al. 2004) by the substantiation of the behaviour as being the desired state (Zand & Sorensen 1975). The operational methods and perspectives are strengthened so that affected staff accept the changes to the way in which they work and the organisation operates (Medley & Akan 2008). It would be expected that the performance in the freezing phase will exceed the levels existing before the change. Participants in the

change will have learned and established new behaviours suitable for the new situation by this time (Ahearne et al. 2010).

Lewin recognised three necessities for a successful change:

- 'That those involved be free to make their own decisions without manipulation or coercion
- That they be helped, by a neutral facilitator, to understand how their behaviour is formed, motivated and maintained. The key tools for this were Field Theory and Group Dynamics
- By learning about their own behaviour, they could change it by utilising Action Research and the 3-Step model of change' Burnes (2009, p. 368).

A planned approach to change has been extensively researched and it has been found that adopting an approach using the Kurt Lewin model is often associated with successful programs. The stage of refreezing in particular is linked strongly to the success of the program (Grover et al. 1995).

Greer and Ford (2009) developed an adaption of the Lewin 3-Step change process with the inclusion of additional factors. Figure 2-7 displays the revised model of the Lewin three step change process.
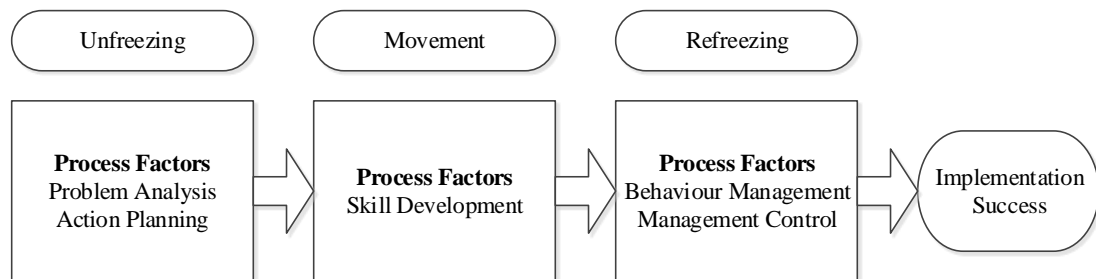
Figure 2-7 Lewin's Amended Three Step Change Process

Source: Greer and Ford (2009, p. 50)

In the amended Lewin model, the unfreezing stage connects with identifying the problems within the organisation affecting performance and the planning of actions to implement new goals and behaviours. The development of new skills is core to the movement phase of Lewin's model. Change occurs because change participants

develop new behaviours and this requires that they learn new skills (Greer & Ford 2009). Staff affected by change need to develop new skills and to apply them before they are required to use them as part of normal day to day tasks. Groups also need to develop new group skills. Providing the new skills requires planning as they will be forgotten if the gap between learning and application is too large (Ford & Greer 2005b). Reinforcement of new behaviours by feedback and rewards is an application of behaviour management in the refreezing third stage of Lewin's model. The control by management enables observation and adjustment of behaviours if the goals of the organisation are not being achieved (Greer & Ford 2009).

Irrespective of the model of change generally three common phases are included. A first phase reviews the existing way of operating and begins to question accepted norms. A second phase substitutes the old ways with new ways and a third phase establishes the new ways and the new norms. Although there are many adaptations to the Lewin 3-Step model in most the same three phases can be seen (Burnes 2009; Ford & Greer 2005b). The different models often apply the Lewin model but include additional stages that enable reviews and reassessment (Grover et al. 1995).

Other Models of Organisational Change

Lewin's planned change model was the first theory addressing organisational change and it has survived longer than others (Burnes & By 2012). Lewin, although a creator of the initial planned change model, is not the only creator of models for planned change. The Bullock and Batten model includes four phases that include exploration, planning, action and integration (By 2005). The exploration phase refers to the preliminary review of the requirements of the organisation. The planning phase involves the engagement of resources and identification of solutions to resolve problems. Implementation is the action to deploy the change and integration refers to the moving of the improvement to normal routine (Timmerman 2003). An alternative six step process includes preparing, developing and implementing, checking, communications and evaluation (Price & Chahal 2006).

Criticism of Lewin

Lewin's theories were widely adopted and used between the 1950s and the 1980s, at which time criticism of them began to develop (Burnes 2004b; Medley & Akan 2008). The models of Lewin, and planned change generally, have been receiving criticism since the 1980s (By 2005). The Lewin model has been discussed as not being suitable for major change and restricted in suitability to smaller changes that are of an incremental type. Planned change is criticised for its assumptions that change is a constant and that organisations are positioned to be able to transition from one condition to another (By 2005). Essentially the Lewin model is considered to be too simple and that it does not consider the politics within organisations or the requirements of larger strategic planning (Burnes 2004b). Considering that organisational change is still an ongoing requirement criticism of planned change models results in the development of new models such as the emergent approach that considers change as an ongoing series of organisational amendments that are affected by changing conditions (By 2005). Burnes (2004b) responds to criticism of planned change including that Lewin's view of an organisation is no longer appropriate, it is too simple, the change model is applicable for incremental change only, planned change disregards power and politics and that it is a top down change model. Criticism of the planned change model is rejected in the article. Burnes (2004b) stated that the planned change model proposed by Lewin is still suitable for different types of changes including incremental change and that Lewin's model has strength in identifying forces affecting groups. The article also states that some of the criticism comes from a lack of understanding of Lewin's approach. The view is expressed that the criticism is unwarranted and that Lewin's work has been misinterpreted. The author supports the view by identifying that there has been a resurgence in interest in the Lewin model in recent years (Burnes 2004c).

Divergent and variable views of change exist amongst the literature. One article reviewed provided a definition that separates change as only being strategic and disregarding incremental change (Jarrett 2003). The same article disputes that change is a constant and considers that the always ongoing change that occurs as organisations adapt at operational levels to changing forces should not be considered as change either (Jarrett 2003). Despite the drive for planned change it is considered

that change will occur regardless of planning (By 2007). It is even suggested in one article that it is impossible to manage change but that it is necessary to direct change to a required outcome (Jarrett 2003).

2.3.6.3 Emergent Change and Kotter

Planned change and organisational development began to receive criticism from the 1980s and since then new and different change theories emerged (Burnes 2009). Two of the new theories of change that began to develop in the 1980s were the punctuated equilibrium and the continuous transformation models. The incremental model had been the primary theory until the 1980s (Burnes 2004c). However, planned change was overtaken by emergent change as the primary approach to change (Burnes 2009). Emergent change is a recognition that change does not occur as a once off event but is ongoing and unpredictable (Burnes 2009). The use of the term *emergent* originated in the early 1990s but was not applied to describe a theory of change. The term emergent was used to describe various approaches to change based upon a difference to planned change (Burnes & By 2012). Emergent change could be viewed more as an approach different to planned change without a specified agreement on the approach (Bamford 2006). The emergent change approach has also been described as 'represented by a loose coalition of theories rather than a tight theoretical school' (Shanley 2007, p. 541). The common view that developed was that change does not occur as unique occurrences. Rather that change is an ongoing requirement of realignments and readjustments of the organisation that cannot be predicted. In this way the organisation changes as an adjustment to changes in its environment (Burnes & By 2012). The requirement for change today is difficult to predict and is frequently caused by an emergency affecting the organisation. As a consequence the change approach needs to be one that reacts (By 2005). Whereas planned change is formal, emergent change is ad hoc and informal. An organisation has a need for updating goods and practices in response to changing circumstances, unplanned occurrences and new possibilities. The new strategies for updating goods and practices are developed in an ad-hoc manner based upon the changing requirements (Weldon 2000).

Emergent change is considered to be vital to enable the survival of organisations and in particular in industries in which change occurs rapidly. Retail and information

technology have been cited as environments in which the ability of an organisation to change continuously is particularly important (Medley & Akan 2008). Supporters of emergent change identify the theory as more appropriate in environments that are unstable and repeatedly changing. The external forces influencing organisations result in emergent change requirements and the adjustment of internal behaviours (Burnes & By 2012).

A planned approach to change does not involve power struggles and organisational politics (Shanley 2007) whereas the emergent change approach is a belief that the result of change is not decided by agreement and cooperation but by conflicts involving power (Burnes 2004c). This approach to change includes groups considering their own position and looking to improve it. An ethical approach is not a consideration in emergent change. Supporters of emergent change consider change to be normal and that internal struggles are necessary to bring about change (Burnes & By 2012). By (2005, p. 375) stated that 'the emergent approach to change is more concerned with change readiness and facilitating for change than to provide specific pre-planned steps for each change project and initiative'. Yet although there are not guidelines for driving change some authors have developed directions (By 2005). Table 2-8 displays three primary emergent change models including that of John Kotter. The Kotter and Luecke models of emergent change are mapped against the Kanter model.

Table 2-8 Comparison of Three Models of Emergent Change

Kanter et al.'s Ten Commandments for Executing Change (1992)	Kotter's Eight-Stage Process for Successful Organisational Transformation (1996)	Luecke's Seven Steps (2003)
1. Analyse the organisation and its need for change		1. Mobilise energy and commitment through joint identification of business problems and their solutions
2. Create a vision and a common direction	3. Developing a vision and strategy	2. Develop a shared vision of how to organise and manage competitiveness
3. Separate from the past		
4. Create a sense of urgency	1. Establishing a sense of urgency	
5. Support a strong leader role		3. Identify the leadership
6. Line up political sponsorship	2. Creating a guiding solution	
7. Craft an implementation plan		
8. Develop enabling structures	5. Empowering broad-based action	
9. Communicate, involve people and be honest	4. Communication change vision	
10. Reinforce and institutionalise change	8. Anchoring new approaches in the culture	6. Institutionalise success through formal policies, systems, and structures
	6. Generating short term wins	
	7. Consolidating gains and producing more change	
		4. Focus on results, not on activities
		5. Start change at the periphery, then let it spread to other units without pushing it from the top
		7. Monitor and adjust strategies in response to problems in the change process

Source: By (2005, p. 376)

Criticism of the Emergent Change Model

The emergent approach to change is still quite new in comparison to the length of time that planned change has been discussed. Criticism has been made of emergent change in that it is inconsistent and limited in practice. Criticism has also been raised that emergent change is primarily an opposition to planned change instead of a different approach as an agreed model (By 2005). The criticism to emergent change has been responded to with the view that the approach is applicable because it needs to be able to adjust to the unpredictability of the change requirements for an organisation. Emergent change is therefore applicable to all organisations, under varying circumstances and when required. This view has been disputed with the consideration that a contingency model is more appropriate. Consideration is provided that organisations should use a model that is best for them rather than try to apply a single approach that is expected to be appropriate for all organisations (By 2005).

2.4 Socio-Technical Systems

2.4.1 Introduction

This section reviews the literature relevant to the Socio-Technical Systems management theory. This section includes an overview of STS, a description of the components of the STS model and the background of STS. The Leavitt Diamond approach is also presented as an STS model of organisational change. This section also reviews the literature that presents STS and an organisational change model that is relevant to IT systems and strategies for the implementation of Socio-Technical Systems.

2.4.2 Overview of STS

The socio-technical system is a model of organisational change associated with organisational development (Lyytinen & Mathiassen 1998). This is relevant to ITIL implementation research because ITIL is a model associated with ERP and BPR implementations. ITIL and ERP implementations have similarities. Each are systems based upon processes and the implementations require change to business processes (Tan et al. 2009). A socio-technical system involves an interaction between people

and technology (Dalpiaz et al. 2012). The socio-technical system is a model that represents relationships between organisational components (Newman & Zhao 2008).

2.4.3 Social and Technical Components of an Organisation

The STS theory considers that work systems are comprised of two components, social and technical (Grover et al. 1995). The social components include the structure of the organisation and people while the technical components includes technology and tasks (Bostrom & Heinen 1977). The STS as a model is displayed in Figure 2-8.
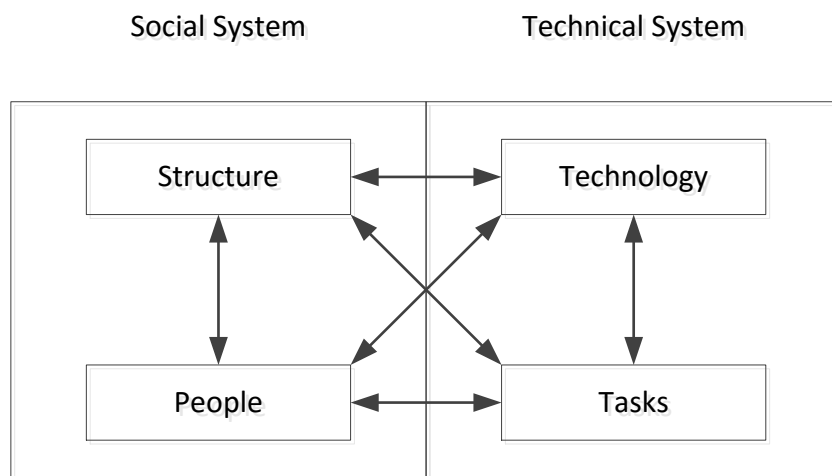
Figure 2-8 Interactions Between Components Within an STS

Source: Chen and Nath (2008, p. 44)

The STS theory has been stated by Nakata et al. (2008) as being comprised of three primary principles. The first principle is that organisations consist of both social and technical components and are not either one or the other alone or foremost social or technical. The second principle is that the components of social and technical are independent but also relate to each other such that in combination they can produce required products from inputs. The third principle is that when an organisation has robust social and technical components the organisation will produce the ideal outputs. Patnayakuni and Ruppel (2010, p. 223) described the technical component as consisting 'of the tools, techniques, devices, artefacts, methods, configurations, procedures and knowledge used by participants to acquire inputs, and transform them into outputs'. The technical component could also be described as the technology and

the associated work requirements (Mumford 2006). The social component was described by Patnayakuni and Ruppel (2010, p. 223) as comprising the 'individuals who work in the organisation and the sum total of their individual and social attributes'. The social components can also be described as characteristics of the individuals in the organisation and their relationships with others. The skills, values, reward systems and authority structures of the people and organisation are part of the social component (Bostrom & Heinen 1977; Bygstad et al. 2010; Chen & Nath 2008). The production of the organisation is the outcome of the interactions between the two components, social and technical (Bostrom & Heinen 1977; Bygstad et al. 2010). The STS theory has two core values. The values include consideration of the human element into the design of tasks and functions in an organisation and the effective combination of social and technical systems (Mumford 2006). A focus of the STS system is that the social and technical components are both considered in equivalent efforts when designing a work system. The relationship between the two components needs to be analysed. Understanding how the social and technical components work in conjunction, rather than independently, enables a consideration for the best outcomes of the organisation. This cannot be achieved when the consideration is only given to the best performance of the components individually (Prida & Grijalvo 2008). In a socio-technical system work models are designed with the inclusion of both the social and technical components equally and with a view to future changes and requirements (Prida & Grijalvo 2008). It is considered preferable in an STS for the technical and social components to be optimised together rather than have one only optimised (Jianfeng et al. 2010). A summary of the descriptions of the STS components is presented in Table 2-9.

Table 2-9 Descriptions of the STS Components

STS Component	STS Sub-component	Definition	Source
Social	Overall	'individuals who work in the organisation and the sum total of their individual and social attributes'.	Patnayakuni and Ruppel (2010, p. 223)
		'the attributes of people (e.g. attitude, skills, values), the relationships among people, reward systems, and authority structures'	Chen and Nath (2008, p. 44)
	Structure	'broader organisational issues including reward systems and authority'	Chen and Nath (2008, p. 48)
	People	'employees and knowledge, skills, attitudes, values and needs they bring to the workplace'	Chen and Nath (2008, p. 46)
Technical	Overall	'tools, techniques, devices, artefacts, methods, configurations, procedures and knowledge used by participants to acquire inputs, and transform them into outputs'	Patnayakuni and Ruppel (2010, p. 223)
		'the processes, tasks, and technology needed to transform inputs to outputs'	Chen and Nath (2008, p. 44)
	Technology or Tool	'the devices, tools and techniques to transform inputs into outputs'	Chen and Nath (2008, p. 49)
	Process or Tasks	'the specific tasks supported by information technology'	Chen and Nath (2008, p. 53)

2.4.4 The History of the Socio-Technical Systems Theory

The socio-technical systems expression refers to systems that require both a human and machine interaction. The STS concept was developed by the Tavistock Institute of Human Relations after the Second World War (Patnayakuni & Ruppel 2010) and therefore is now in excess of 50 years old (Mumford 2006). The origins of STS concepts can be dated back to the 1930s in England (Horton et al. 2005). The theory of socio-technical systems developed from two sources according to the literature. Some literature states that the STS theory resulted from research into the British coal mining industry. The research was based upon the reaching of goals by organisations and the possibilities and boundaries associated with technology (Nakata et al. 2008). The issue affecting the miners was the destruction of the mining work groups resulting from the implementation of modern machinery. Miners no longer worked in small groups where each could do all tasks but now worked independently at singular tasks (Prida & Grijalvo 2008). Other literature documents that a group of researchers and therapists assisting retuned soldiers affected by World War II developed capabilities that could benefit organisations (Mumford 2006). The initial intention was to help soldiers affected by the war to return to civilian lives (Mumford 2006). The Tavistock Institute of Human Relations was formed in London in 1946 and consisted of numerous psychiatrists. The emphasis of the institute was on groups rather than providing therapy for individuals (Mumford 2006). The Tavistock Institute recognised that an organisation was comprised of both social and technological components. The Institute identified that although they were distinct they needed to combine for optimisation (Kling et al. 2003; Patnayakuni & Ruppel 2010). Kurt Lewin was associated with research conducted by the group with an outcome that the joint research was referred to as Lewin's theory of Action Research (Mumford 2006).

The STS theory became more widely distributed during the 1950s and 1960s with a particular interest from Scandinavian countries (Benders et al. 2006). The STS theory developed until in the 1970s it had become a recognised practice. However, part of the reason for its acceptance was because there was a shortage of labour and organisations were considerate to the human side of the practices due to attempts to retain staff. Throughout the 1980s as organisations focussed on increasing

productivity with fewer staff the STS approach began to decline (Mumford 2006). A growing number of organisations are now reviewing Socio-Technical Systems. Organisations have a requirement to ensure the requirements of new technology and the social necessities of staff are achieved. To achieve this organisations are looking to STS approaches in the design of new work systems (Fairhurst et al. 1995). The STS model has been applied with success for more than 30 years to various industries. Manufacturing and service industries have applied STS approaches to the way in which they have determined their business processes. The application of STS methodologies to the design of ways of conducting work has resulted in improved productivity and the more efficient use of people and equipment (Patnayakuni & Ruppel 2010).

2.4.5 The Leavitt Diamond of Socio-Technical Systems

The Leavitt Diamond of organisational change is an STS change model that identifies four components of an organisation. These are: task, structure, people and technology (Lyytinen & Mathiassen 1998). These are the four organisational components also represented as organisational components in the STS model as shown in Figure 2-8. The Leavitt Diamond is displayed as Figure 2-9. This model shows that any change to any part of the work system will create a requirement for change elsewhere (Galliers & Baker 1995). The Leavitt Diamond provides focus to the importance of the connections between the four components of the organisation (Price & Chahal 2006). The theory identifies that if there is a change to one of the four components then there will need to be an appropriate change to the others so that they stay equally aligned (El Sawy 2001). The model is recognised for its simplicity and shows the importance of relationships between the four components (Newman & Zhao 2008).
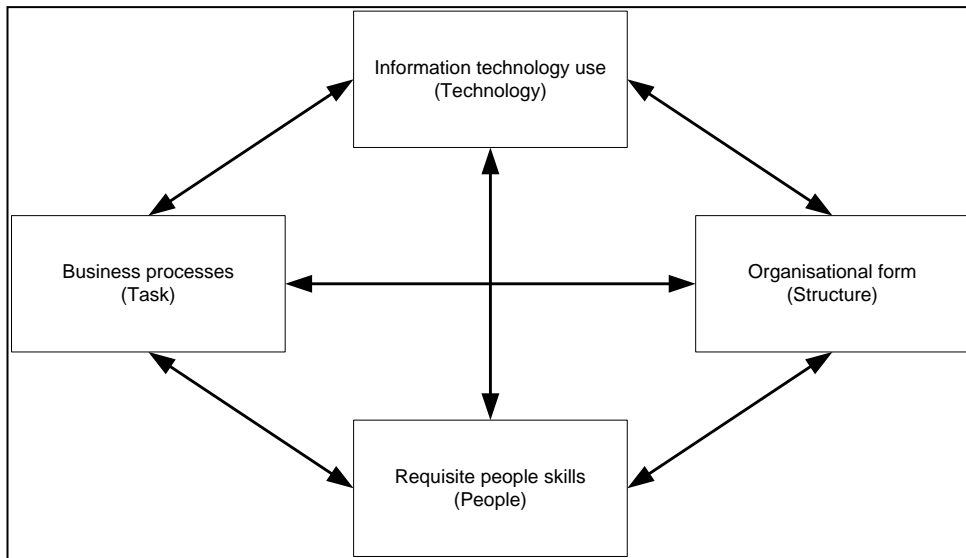
Figure 2-9 Leavitt's Diamond

Source: El Sawy (2001, p. 9)

The requirement of the STS model is that if a change is made to the way in which an organisation performs its work both the technical and social components of the organisation must be taken into consideration. This requires that in technology dependent industries the impact on the social components also needs to be considered (Chen & Nath 2008). Consequently it can be considered that if new business processes are introduced then there may need to be changes to technology, people skills and organisational form. The STS view recognises that there is a need for equal emphasis on both the technical and social aspects of an organisation. If one part is changed then other parts will need to be changed. It is necessary to understand that changes that involve technology do not involve only the technology. The emphasis cannot be on process in isolation when new processes are being implemented (Galliers & Baker 1995).

The Leavitt Diamond has been criticised due to the exclusion of components including power, politics and culture which can be viewed as other components in an organisation. The Leavitt Diamond can be adjusted in conjunction with other models (Newman & Zhao 2008). An example of an adjustment to the original Leavitt Diamond is an amendment to include culture, displayed as Figure 2-10. This model provides the inclusions required to satisfy those who prefer to view culture in the model. The model in this form includes the perspectives of participants

in change as represented by the Viewpoints component in the model (Galliers & Baker 1995).
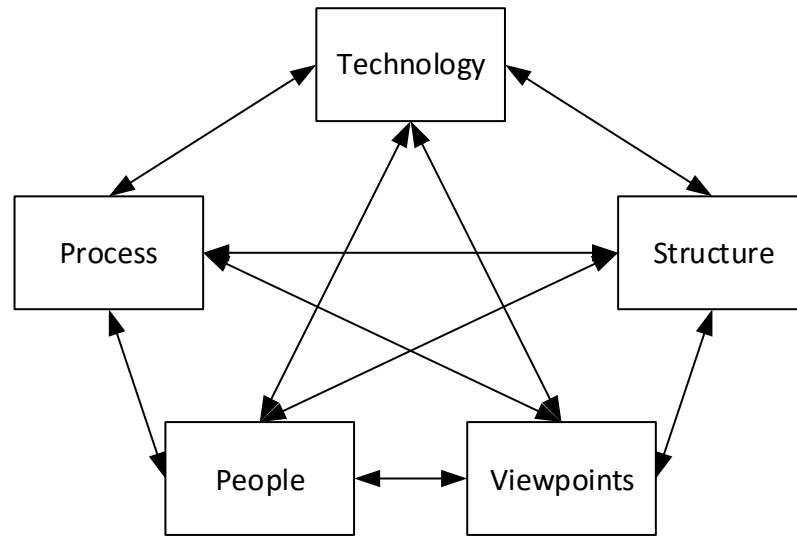
Figure 2-10 An Amended Version of Leavitt's Diamond

Source: Galliers and Baker (1995, p. 267)

2.4.6 STS as Organisational Development

The work of Kurt Lewin, and in particular action research, is considered to be associated with STS theory (Fangqi & Rickards 2007). STS theory progressed from the work undertaken to include human capabilities into organisations and the active participation of staff in work design (Fangqi & Rickards 2007). STS theory is a model of organisational change (Lyytinen & Mathiassen 1998). Warzynski (2005) defined both organisational development and STS with note of the STS components of people, processes, structures and technology and the requirement for their integration and alignment to benefit the organisation. New IT systems have been implemented with the application of an STS approach to an organisational development strategy for change (Warzynski 2005). Organisational development had been recognised as an approach to planned change, but as it developed it broadened in scope to include Socio-Technical Systems across enterprise-wide concerns (Burnes 2004a).

The focus of a significant number of researchers on organisational development has been to identify ways in which planned change may improve organisational efficiency. STS theory has been one technique studied (Grover et al. 1995).

2.4.7 The Social and Technical System in an IT Environment

Organisations and society are confronted daily with socio-technical systems related to information technology. One example of a common STS based on information technology is eBay. eBay is an Internet auction service that combines people, technology and rules with delivery organisations. eBay as an example demonstrates that an STS produces an output from the combined relationships of the socio and technical components of an organisation (Bygstad et al. 2010).

The common approach to information technology is that the technical component should be achieved with the socio component adapted to meet the requirements. The STS view is that designs that focus on technology at the expense of social components may result in many of the information technology failures. Further, the STS approach will result in a design that recognises that socio and technical components be designed such they there is a recognition of the impact of each STS component to each other (Chen & Nath 2008). Chen and Nath (2008) state that for a range of IT activities including systems analysis, work design and new technology, the STS theory is the most favoured method and the one that is most extensively adopted.

Figure 2-11 displays an STS in an IS work environment. The work system is displayed as four levels. The four levels comprise the hardware, software, the human computer interaction and the socio-technical components. The descriptions of the levels are provided in Table 2-10. The table and diagram can be explained in the context of an STS. The combination of hardware and software provides the technology. When people are combined with the technology the result is an interaction of humans and computers. The STS is the result when the individuals form groups based upon the use of technology (Whitworth et al. 2008; Whitworth & De Moor 2003). The STS model shown in Figure 2-11 displays the social component of the organisation constructed on the technical component. The human computer

interaction builds upon the technology component (Whitworth et al. 2008; Whitworth & De Moor 2003).
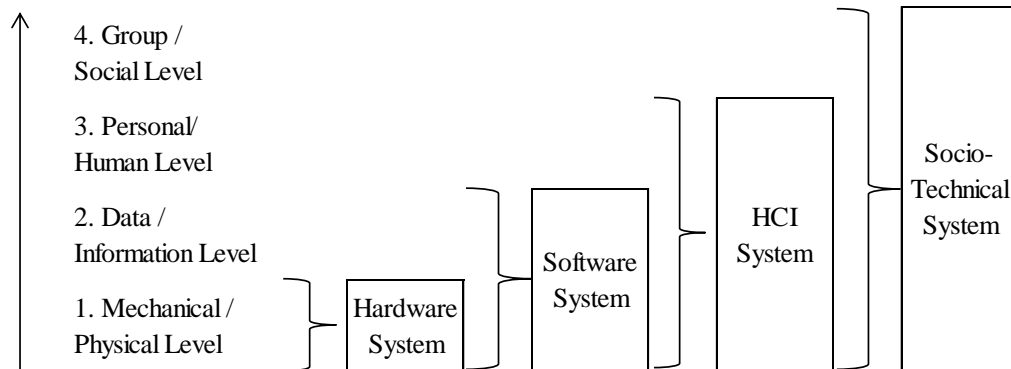
Figure 2-11 Social and Technical Components of an Organisation

Source: Whitworth et al. (2008, p. 779)

The four levels of the information system as displayed in Figure 2-11 are described in Table 2-10.

Table 2-10 Four Levels of an Information System.

Level	Description
1	Hardware: including the computers and other components
2	Software: including the programs and data
3	Human-computer interaction: including attitudes, beliefs, opinions
4	Socio-technical: including the culture, laws and roles

Source: Whitworth et al. (2008)

Using the technical components of an organisation requires that people have the necessary skills to do so. The technology needs to be integrated into the tasks to be performed. The roles and work performed are connected to the information technology that they use. The application of information technology in an organisation, through its development and implementation, requires an STS approach. There exists a need to ensure that the people that use technology have their requirements addressed with as much focus as the technical requirements (Aanestad et al. 2007).

2.4.8 Socio-Technical Systems in an Organisation

ERP and BPR have been included in this research as there is a lack of research into the implementations of ITIL (Iden & Langeland 2010; Pollard & Cater-Steel 2009) and the implementations of ERP and ITIL have been recognised for their similarity. Each are systems based upon processes and the implementations require change to business processes (Tan et al. 2009). Research into the failure of the implementation of ERP systems has identified a relationship to Socio-Technical System (STS) issues (Shah et al. 2011). BPR is also included because changes to an organisation resulting from BPR alignment with ERP may include the organisational structure, processes and culture (Huq et al. 2006).

The growth of Business Process Reengineering (BPR) has significantly changed organisations since the 1990s (Huq et al. 2006) just as Enterprise Resource Planning (ERP) has expanded across organisations in the same period (Al-Mashari 2003).

Nah et al. (2003, p. 5) described ERP as a 'packaged software system that enables a company to manage the efficient use of resources (materials, human resources, finance etc.) by providing a total, integrated solution for its information-processing needs'. An ERP system is an information technology solution that centralises the processes and functions of an organisation by using IT applications (McAdam & Galloway 2005). ERP systems are usually created so that they can be applied across multiple countries, languages and currencies and are able therefore to support world-wide organisations (Robey et al. 2002). Organisations implement ERP systems because they expect to be able to improve their performance and increase their competiveness. This is to be achieved by increasing the efficiency of their processes and by reducing the need for performing work multiple times (Kwahk & Ahn 2010). The growth of ERP in organisations world-wide has been significant. Multiple estimates have been documented relating to change and cost associated with ERP systems. Implementing ERP has been estimated as responsible for 30 per cent of the significant changes that organisations are attempting (Morris & Venkatesh 2010). It has been estimated that the global spending on ERP systems in 2008 was US$24 billion (Seddon et al. 2010).

BPR has been described as a reconsideration and redesign of business processes to achieve efficiency improvements in the areas of performance, cost, quality and service (Albizu et al. 2004). The intention of BPR is to make both minor and major improvements to process in an organisation resulting in improved competitiveness and performance (Saad 2009). BPR has as an objective the removal of obstacles and unnecessary tasks within an organisation (Laura-Georgeta 2008). BPR is not considered to be a defined one way method for achieving the process-oriented performance improvements (McCabe 2004). Huq et al. (2006, p. 70) explained BPR as 'really the culmination of various management practices and schools of thought'. BPR more closely resembles a comprehensive structure that progresses a change in an organisation through the use of information technology. This is achieved by an organisational change that introduces teams with multiple skills, new processes and a change or reduction in organisational levels (McCabe 2004). BPR has emerged as a response to the need of organisations to improve performance where existing work processes were unable to meet requirements. Information technology is a considerable enabler of the changes being made and subsequent performance improvements. It has been reported in 2000 that more than 70 per cent of large organisations in the United States have undergone a reengineering of their business processes. The growth of BPR continues in recent years (Thong et al. 2000).

ERP and BPR do not always take place together but they can occur with BPR as change resulting from the requirements of ERP (Huq et al. 2006). However, it is often the case that BPR and ERP occur simultaneously and with interactions. ERP systems will cause changes to the business processes regardless and result in new organisational practices (Grabski et al. 2011). The implementation of ERP may require an organisation to make adjustments in accordance with the requirements of the information technology applications. Changes to an organisation resulting from BPR alignment with ERP may include the organisational structure, processes and culture (Huq et al. 2006). The improvements resulting from ERP are based upon significantly changing how the organisation operates. The organisation's business processes can be completely redesigned to make the best use of the automation of the information technology being introduced as an ERP system (Pan et al. 2007).

ERP and BPR have both been recognised as socio-technical work systems. Williams and Hardy (2005, p. 273) described in regards to ERP that 'these systems need to be integrated with a diverse range of existing technologies, infrastructure, policies and practices of multiple stakeholders both within and beyond the organisation, creating major challenges for organisations'. Systems that are for the purpose of enterprise wide requirements, such as ERP, characterise STS change. STS change for an ERP system displays the need for changes to the way work is performed, new roles, adjustments to current roles and new skills (Williams & Hardy 2005). There is the recognition that information technology may drive BPR but reengineering of business processes in an organisation is STS change (Teng et al. 1998). An organisation that decides to implement ERP should recognise that this will be an STS task. The organisation and technology interactions will affect each other and cause adjustments to be made to each ongoing (Pan et al. 2007). Research has identified that organisations adopting BPR will need to consider the STS circumstances within the organisational change (Grover et al. 1995).

2.4.9 Implementing Socio-Technical Systems

The implementation of ERP is considered to be very complicated (Kwahk & Ahn 2010) and difficult to successfully achieve (Al-Mashari 2003). An ERP implementation can incur significant costs and extend over long periods of time (Quiescenti et al. 2006). The complexity of the ERP implementation has been described as a change to the existing state and the opportunities created by organisations to undertake major reorganisation and implement improved processes (McAdam & Galloway 2005). The literature documents many different reports on the success of the ERP implementations. The issues encountered included 90 per cent of ERP implementations taking longer to complete than expected. Additionally, only 3.6 per cent finished within their project time and budget and without issues while fulfilling their goals (McAdam & Galloway 2005). Other reported ERP implementation performance indicators include over 60 per cent of ERP implementations failing (Morris & Venkatesh 2010) with another research article estimating the failure rate to be at least 40 to 60 per cent and possibly more (Li et al. 2006). An ERP implementation will often be in conjunction with BPR and will require new software. The effect on staff may be considerable with changes to the

way in which they perform their work and effectively their whole job. Consequently, this is much more complex than the deployment of technologies that are less complicated (Morris & Venkatesh 2010). The cost of failure of ERP implementations can be significant. As commented previously, the estimated global spending on ERP systems in 2008 was US$24 billion (Seddon et al. 2010). The financial outlay for an ERP implementation may vary between several million dollars to in excess of $100 million (Al-Turki 2011). The significance of ERP failures has been identified with recognition that of the largest ten information technology failures half are ERP systems and that the losses to the organisations vary between $6 million to in excess of $100 million (Morris & Venkatesh 2010).

2.4.10   Failure of STS Implementations

Research into ERP and BPR implementations has identified numerous reasons for the failure of the programs. Frequently provided reasons include resistance to change, a focus on technology, inadequate focus on people issues and the change management practices. Although ERP systems are advanced information technology the failure of the implementations is not restricted to issues solely associated with the technical components (Kwahk & Ahn 2010).

Implementing ERP is complicated and numerous organisations that have been technically focussed have been unable to manage the intricacy of the implementation and the significant organisational change necessary. The focus on the technical aspects without considering the change management requirements has contributed to many failures (Al-Mashari 2003). The failure of BPR programs has also been attributed to an excessive focus on technical issues. The management of change involving people has not been provided with as much focus as information technology. The human aspects of the BPR implementation and the organisational considerations are often ignored. The literature on BPR implementations shows that 95.9 per cent of articles concentrate on technology (Zaidifard 1998). Yet it has also been shown that ERP implementations have failed because the users did not receive sufficient training or that training was not continued after implementation (Grabski et al. 2011). Users that have not been adequately trained in the use of the ERP system are likely to continue to perform their work as they had previously with a resultant failure of the implementation (Bagranoff & Brewer 2003).

The resistance to change by the users of the system is an important reason for failure (Kwahk & Ahn 2010; Martin & Huq 2007). Implementing an ERP system causes people to work differently in order to interact with the system resulting in increasing their resistance to change (Martin & Huq 2007). Users of the ERP system who will not use it merely because of resistance to change, will prevent the system from benefitting the organisation as it was intended (Kwahk & Ahn 2010).

A review of ERP implementations by Stapleton and Rezak (2004) from 1994 identified only a small number of failures that could be attributed to technical issues. Many reasons for failure were identified, however the majority of failures were caused by a lack of organisational change and the inability to address the impact of the work performed by people. The review also identified that the technology and process components received most of the focus at the expense of the people requirements thereby negatively affecting the implementation (Stapleton & Rezak 2004).

Previous research into the issues faced by ERP implementations was analysed by Shah et al. (2011). The results are displayed in Table 2-11.

Table 2-11 Issues Faced by ERP Implementations

Problem	Cited Author
Need to change existing business processes during implementation of an ERP system	Wood, 2010; Zhang, 2002; Singh, 2009
Lack of user involvement, top management support	Huang, 2010; Vineets, 2006; Wallace, 2004
Lack of education and user training	Zhang, 2002; Bhatti, 2005
User resistance	Zhang, 2002; Bhatti, 2005; Lindley, 2008
Poor selection of ERP system and vendors	Bhatti, 2005; Syed Iftikhar, 2008
Lack of data accuracy	Vineets, 2006
Lack of interest in managing cultural issues	Motwani, 2005
Unrealistic expectations and customisation	Zhang, 2002; Syed Iftikhar, 2008
Lack of organisational commitment that ultimately slows down the implementation process	Zhang, 2002
Poor Cost estimation and scheduling leading to over budget and delayed implementation of ERP	Lindley, 2008; Francoise, 2009; Holland, 1999; Parr, 2000

Source: Adapted from Shah et al. (2011, p. 743)

The review conducted by Shah et al. (2011) identified that problems in both the technical and social side aspects of the implementation contribute to the failures and that this has been commonly referred to in research articles.

The occurrence of unexpected issues highlights the identification of BPR as an STS. The result has been that after an initial focus on technical requirements an organisation is now typically managing the impact to the human and organisational demands of the implementation (Freedman 1997). Freedman (1997, p. 53) expressed his concerns with BPR change management practices and a technical focus when he stated: 'I, like many organisational development practitioners, am dismayed by the obvious collusion between technical expert management consultants and the leader of the client organisations in ignoring and failing to anticipate and prepare for the obvious fact that radical innovations are not easily understood, accepted, used, diffused or disseminated, and assimilated by organisational members who are addicted to a contrasting reality that is well established, familiar and comfortable for them'.

2.4.10.1   Critical Success Factors

Research into ERP implementations using a critical success factor (CSF) approach has identified the importance of the STS aspects of the implementation. Research findings of CSFs for ERP implementations identified that a CSF of organisational change management is commonly referred to in literature (McAdam & Galloway 2005). The research identified that an ERP implementation must attend to the organisational change problems. The research further identifies that the requirement for implementation is not only to consider the technical components of the implementation but to ensure that the problems confronting the organisation are addressed (McAdam & Galloway 2005).

Kwahk and Ahn (2010) referred to a review of ERP implementation literature consisting of an analysis of 48 academic sources across 10 countries and areas. The literature review identified 18 critical success factors. The CSFs are displayed in Table 2-12. Change management is again identified as one of the most commonly identified CSFs.

Table 2-12 Critical Success Factors in the Implementation of ERP Systems

No.	CSF	No.	CSF
1	Appropriate business and IT legacy systems	10	Monitoring and evaluation performance
2	Business plan / vision/goals/justification	11	Organisational characteristics
3	Business process reengineering	12	Project Champion
4	Change management culture and program	13	Project Management
5	Communication	14	Software development, testing and troubleshooting
6	Data management	15	Top management support
7	ERP strategy and implementation methodology	16	Fit between ERP and business / process
8	ERP teamwork and composition	17	National culture
9	ERP vendor	18	Country related functional requirements

Source: Kwahk and Ahn (2010, p. 188)

The CSFs presented in Table 2-12 can be viewed in the STS context. The Socio component (of STS) is recognised in item 4, change management culture and program and process change is recognised in item 16, Fit between ERP and business/process. The STS Technical components are noted in items 1 and 14 referring to IT systems and software development (Kwahk & Ahn 2010). The study reached the conclusion that an ERP implementation is comprised of both social and organisational components. The authors proposed that an ERP implementation should be conducted with an STS approach (Kwahk & Ahn 2010).

2.4.11 Change Strategies for Implementing STS

Organisations use various change strategies to implement ERP and BPR. The strategies can include a big bang or phased approach, a revolutionary or evolutionary approach, a planned or emergent approach and an STS approach. Planned change includes the STS approach focusing on the relationships that exist between organisational components of technology, people, structure and processes (Price & Chahal 2006). BPR must be implemented on a large scale in an organisation with an expectation that the outcome may be uncertain. Implementing BPR is not a program that should be undertaken in a minor way. The existing rules under which an organisation operates need to be discarded (Hammer 1990).

2.4.11.1   Big Bang & Revolutionary / Phased

Okrent and Vokurka (2004) proposed that there are three general approaches to implementing ERP. The approaches are pilot, parallel and big bang. Revolutionary change may also be referred to as a big bang approach with a more gradual phased approach referred to as evolutionary (Stoddard & Jarvenpaa 1995). The pilot approach deploys the ERP system to a designated area and progresses according to a prioritisation of organisational benefit. This can take a significant time but reduces risk. The parallel approach requires users of the system to enter into both the old and new systems prior to a migration. This approach has risk but not a high risk. The final approach, the big bang, or revolutionary approach, requires a complete migration on a designated day. This is considered to be high risk and organisations are known to have had issues with this approach. Additionally a combination of small implementations as a combination of big bang and phased approaches has been applied by organisations. This may require sections of the organisation to migrate with a revolutionary or big bang approach with further sections migrating similarly at a later time as scheduled (Okrent & Vokurka 2004).

One study of the implementation strategies by organisations implementing business processes identified that some used a revolutionary while others used an evolutionary approach. The choice of strategy was determined according to the requirements of the organisation. The big bang approach was considered as the most suitable for smaller organisations that required implementations in shorter time frames. The big bang approach was considered to be the most difficult due to the potential for encountering resistance to change. A phased parallel approach whereby processes were introduced over time was considered more suitable for larger organisations. This approach was likely to require consultants to be engaged for longer periods with a resultant increase in costs (Pollard & Cater-Steel 2009). BPR implementations are typically planned with a big bang approach. This view is that an implementation of BPR cannot be undertaken in small phases but has to be performed all at once (Stoddard & Jarvenpaa 1995).

On the other hand, ERP implementations seem to favour a phased approach. For example, a survey was conducted in 2006-2007 of multinational, local and small to medium companies that had implemented ERP. The results from 93 participants on

the implementation strategy identified that almost all the organisations applied a phased rather than a big bang approach. This was viewed as a direction intended to reduce risk associated with the implementation (Al-Turki 2011).

2.4.11.2   Planned / Emergent Change

The survey conducted by Al-Turki (2011) investigated the implementation of ERP as planned change. The survey showed the result that 55 per cent of organisations applied planned change strategies and another 25 per cent had at least some planned change applied informally. The survey further identified that an ERP implementation was four times more likely to be successful if a planned change strategy is applied.

BPR implementation has been identified as involving both planned and emergent change. The research showed that implementing BPR is very complex and that there are fundamentals of planned and emergent change strategies. However, the recognition is made that predominantly the literature refers to planned change for STS implementations (Grover et al. 1995). The wide ranging focus for an organisation should be that a BPR implementation requires a planned change to be successful. A BPR implementation will require support from management as well as technical skills and the breakdown of resistance to change. It may be very difficult to have full control over both the organisational and technical factors of a BPR implementation. Consequently there may be a requirement for an emergent approach to support the complexity of the people and technology (Grover et al. 1995).

Other literature recognises that both planned and emergent change can be applied to BPR implementations. As technology implementations require organisation and technology adjustments, change has been documented as occurring more slowly without having been initially planned in order overcome gaps. Technology change has been considered as emergent change because the outcomes of technology change may be unpredictable as a consequence of the complicated social factors (Stoddard & Jarvenpaa 1995). The view as to whether changes to socio-technical systems are planned or emergent change is not consistent. Another view of planned change for BPR is that it is variable by the size of the planned change (Kettinger et al. 1997) without reference to emergent change. Additionally there is recognition that the complexity of ERP implementations and the management of organisational factors

and cultural change requires a cautiously planned approach (McAdam & Galloway 2005). The outcome of the various articles reviewed indicates that there is not a clear preference. A planned approach to the implementation of an STS is recognised but it is also recognised that there is scope for an emergent strategy for at least parts of the implementation.

2.4.11.3   Socio-Technical Approach

Organisational change that is planned and managed will address requirements of an organisation such that the Leavitt Diamond remains balanced and the change is implemented successfully. The requirement for the change is that each of the components is adjusted according to needs to maintain that balance (El Sawy 2001). As has been identified with ITIL adoptions the implementing of ERP and BPR results in changes to processes, organisational culture and organisational structure (Huq et al. 2006). The failure of the implementation of ERP systems has been identified as resulting from both technical and social issues of the change (Shah et al. 2011). It has also been identified that managing the implementation of ERP has been successful when it has been conducted as an organisational change (Newman & Zhao 2008).

Historically the approach to information technology has been that the social components are adjusted to meet the requirements of the technology. This is opposed to the STS approach in which the social and technical components are provided with equal focus (Bostrom & Heinen 1977). Organisations that apply change to their technical components will require change throughout the organisation. Organisations respond differently to technical change. The same technical change applied to different organisations can result in different social outcomes. Consequently the impact of technical change produces unique social impacts and the information technological and social components combine differently across different organisations. The users of the technology will create their own ways of using the technology and this may be different to the way in which managers expected. The STS theory provides an approach to the design of an environment with consideration for social and technical components by understanding the interactions between the organisation and the technology (Tapia & Maitland 2009).

A significant component of the literature in regards to the STS theory has referred to STS and the two interacting components of technical and social. The STS approach to change recognises that the outcome of the socio-technical system is a result of the interactions between technical and social components. Consequently, an STS approach to change will include a design focussing on the interactions of the components with the result that a significant difference will exist between the previous and new way of working (Grover et al. 1995). The design will highlight the changes to both technical and social components. It has been suggested that users of the new systems are engaged in the design process to ensure that the STS components are addressed and to reduce the risk of failure. The success of an information systems implementation has been linked to an increased participation by users of the system. An STS approach to information systems change consisting of four stages has been proposed. The four stages include a review of the system, an analysis of the technical components, an analysis of the social components and the recommendations for the IT solution (Grover et al. 1995).

Research into information technology systems has identified that organisations that implement innovative systems do not necessarily benefit from them. There is a growing understanding that organisations have intricate connections with the technology (Tapia & Maitland 2009). Tapia and Maitland (2009, p. 587) described the STS theory as seeking 'to understand the influence and interdependence of organisational and technical characteristics for the effective design, development, implementation, and use of information systems'. Consequently an STS method believes that recognition of the two components of social and technical need to be considered when redesigning work systems (Tapia & Maitland 2009). Implementing a socio-technical system, such as ERP or BPR, has emphasised the need for the technical and social components to receive an equal share of the focus (Galliers & Baker 1995). When the focus has been provided to changes in either process or technology the recognition that additional change needs are being created is overlooked. The involvement of users of the systems and the management of people issues through the use of human resource practices has resulted in an increased rate of success of implementation (Grover et al. 1995). Implementing socio-technical systems as organisational change attempts to bring multiple organisational components to an alignment and involves technology, people, process and

organisational structure. A change management approach provides opportunities to overcome barriers and bring about the change (Grabski et al. 2011).

Further research into information technology change has identified that it causes a need for more changes. An STS approach has found to be more successful through greater involvement by users of the systems. The increased involvement by human resource practitioners has been recommended for information technology change (Grover et al. 1995).

An STS approach to change may occur differently according to different change strategies. An evolutionary change strategy with an STS change approach occurs as different phases. This may occur as change to the socio components or to the technical components first. A revolutionary change strategy would result in change to both the socio and technical components at the same time (Stoddard & Jarvenpaa 1995). A further view of change strategy effectively proposes four strategies for an STS approach to change: both socio and technical components simultaneously; technical first; social first; and a phased STS change. An organisation that introduces technical change before social change is anticipating that the technical change will encourage a social change. Whereas a social change before the technical change indicates a need for the organisation to resolve organisational issues prior to implementing new technology. The phased STS approach enables an organisation to adjust to gaps as social and technical change occurs simultaneously. This approach allows for an organisation to manage change when planning in advance would have been difficult or not possible (Stoddard & Jarvenpaa 1995). Stoddard and Jarvenpaa (1995) found in a study of 85 public libraries implementing technology those that implemented technology and social changes in a balanced way performed better than those that did not. The study also identified that those that made organisational change before the technical change had the best outcomes. Table 2-13 summarises the STS approach to change in conjunction with evolutionary and revolutionary strategies. According to Stoddard and Jarvenpaa (1995), and as displayed in Table 2-13, a revolutionary change will involve the change of both social and technical systems at the same time. An evolutionary change will involve a phased approach and with either the technical or the social system changed first.

Table 2-13 Evolutionary and Revolutionary Change: A Comparison of STS Tactics

	Evolutionary	Revolutionary
IT Change	Process or social system first. Gradual or staged implementation of technical and social systems	Simultaneous change of technical and social systems

Source: Stoddard and Jarvenpaa (1995)

In further reference to the revolutionary change nature of ERP implementations recognition is provided for the majority of issues occurring in the socio components of the change rather than the technical components (Harley et al. 2006). The ERP implementation is referred to by Pan et al. (2007, p. 406) as a 'socio-technical challenge where group and organisational dynamics and technological advancement continuously and mutually shape and reshape each other'.

Certain aspects of the BPR design strategy have been associated with STS. This includes the organisation requirements and work group roles. However, by focussing on the technical requirements, the BPR implementation may consequently depart from the STS approach of the shared emphasis on both technical and socio aspects. The organisational structure may receive a great deal of the focus but other aspects of the social components may receive less attention (Johnson-Cramer et al. 2003).

The ability of an organisation to draw together elements of the organisation to be able to solve problems is referred to as readiness. This is particularly important in regards to the implementation of technical change in order to create revised results for the organisation. An organisation can be considered to be ready when it has developed an STS approach to change. Figure 2-12 displays a process to achieve socio-technical readiness in the context of an ERP system. The STS approach to change is expected to produce the alignment across the organisation that will deliver the required outcomes and services to customers (Kessler et al. 2012).
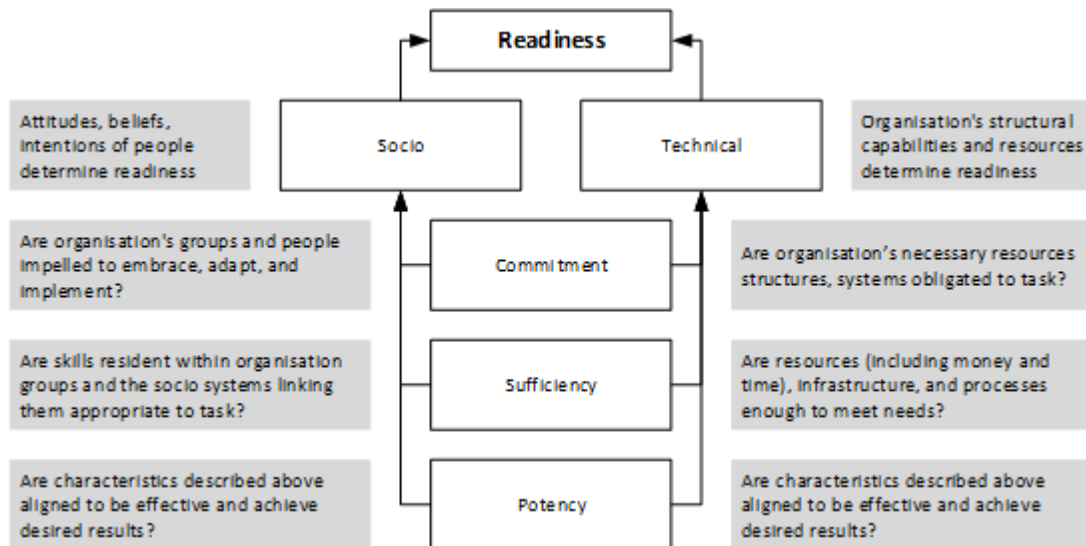
Figure 2-12 STS Readiness Process for ERP

Source: Kessler et al. (2012, p. 180)

Knowledge and understanding of the STS approach to change has been identified as a strategy to overcome resistance to change. The false view is known to exist in BPR implementations that once implemented users will adopt the new processes and integrate them into the accepted work practices. There may be the incorrect view that the fault is with the individual if the new processes are not adopted and issues with the individual will need to be addressed (Freedman 1997). Organisations that implement BPR may believe that the resistance to the change will be resolved without the requirement for action or that individuals that do resist will either adapt or leave (Freedman 1997). Research into the dissatisfaction of BPR implementations indicates that leaders blame the manager's lack of ability to deal with unanticipated issues for the poor results. An ability to understand and manage the unexpected issues encountered in a BPR implementation demonstrates a knowledge of the resistance to STS change (Freedman 1997). Understanding the STS theories associated with the separated but interrelated socio and technical parts of an organisation and how they interact will enable leaders to know what will happen as a flow on from changes to one part of an organisation. Leaders who are prepared for the resistance to change by understanding the STS approach have an increased probability of acting appropriately to address the resistance (Freedman 1997).

Robert Bostrom published a significant article in 1977 in which he documented the reasons for failure of information systems implementations and recommended an STS approach to the design of information systems. Bostrom and Heinen (1977) identified that the design of information systems produced additional changes within an organisation. However, due to the attention provided by the designer to process and technology, other changes and outcomes were not given focus. Changes in the processes in an organisation affecting the way in which people worked together has been recognised. (Bostrom & Heinen 1977, p. 25) stated that: 'the strong association between these work relationships changes and the attitudes, motivations, and the interpersonal behaviour of the individuals within the system is of particular importance'. Relationships exist between the people and process components of an organisation and these are just as important as relationships between the technology and processes of the organisation. Figure 2-13 demonstrates the impact on an STS resulting from information systems change.
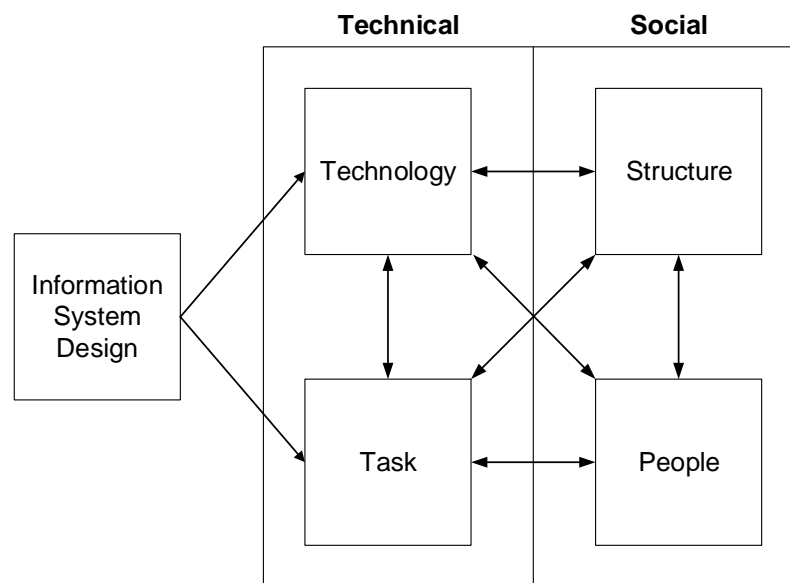
Figure 2-13 Impact on an STS of an IS Change

Source: Adapted from Bostrom and Heinen (1977, p. 25)

A model consisting of four stages has been developed for ERP implementations. The four stages include identifying the requirement and preparing to implement ERP, the design of the ERP and the supporting processes, the implementation of ERP itself and the integrating of the system into the organisation. The phases are likely to

overlap rather than follow each other. This model highlights the STS requirements that are faced in an ERP implementation. It can be seen that the need exists to progress both social and technical requirements and make adjustments along the path of the implementation as they influence each other. A knowledge of the current social and technical components can benefit the development of new technical and social requirements in the implementation strategy (Pan et al. 2007). Bostrom and Heinen (1977) identified a three stage STS approach to implement information systems, displayed in Table 2-14, that ensures that users participate in the design process. This is a requirement that is not consistently addressed in information systems implementations. A phase that is specifically dedicated to an STS design overcomes the technical focus that has frequently received the most attention. This phase will ensure that both the social and technical components receive equal emphasis. The STS approach recognises that systems require constant reviewing to identify the need for adjustments to designs. Consequently this model of an STS approach to change can be viewed as a repetitious process in which the need to design and redesign occurs to ensure that the goals of the change are achieved. Adjustments according to the requirements of STS can be made as identified (Bostrom & Heinen 1977).

Table 2-14 A Three Stage STS Approach to Implementing Information Systems

Phase	Purpose
Strategic Design Process	Users identify the goals and project responsibility.
STS Process	Develop a design that includes a joint focus on the social and technical components
Ongoing Management Process	Monitor the new system to ensure it is meeting the goals and make adjustments according to the STS requirements

Source: Bostrom and Heinen (1977)

The punctuated equilibrium model (depicted in Figure 2-3) was modified by Newman and Zhao (2008) in their research on STS approaches to ERP implementations. The punctuated STS model, as depicted in Figure 2-14, identifies that gaps will occur when one of the STS components is affected by change. The change will affect the balance between the components. When the gap occurs action will need to be taken to restore the balance by eliminating the gap.

Should the gap not be recognised and action taken to restore the balance the gap could worsen or new gaps appear.
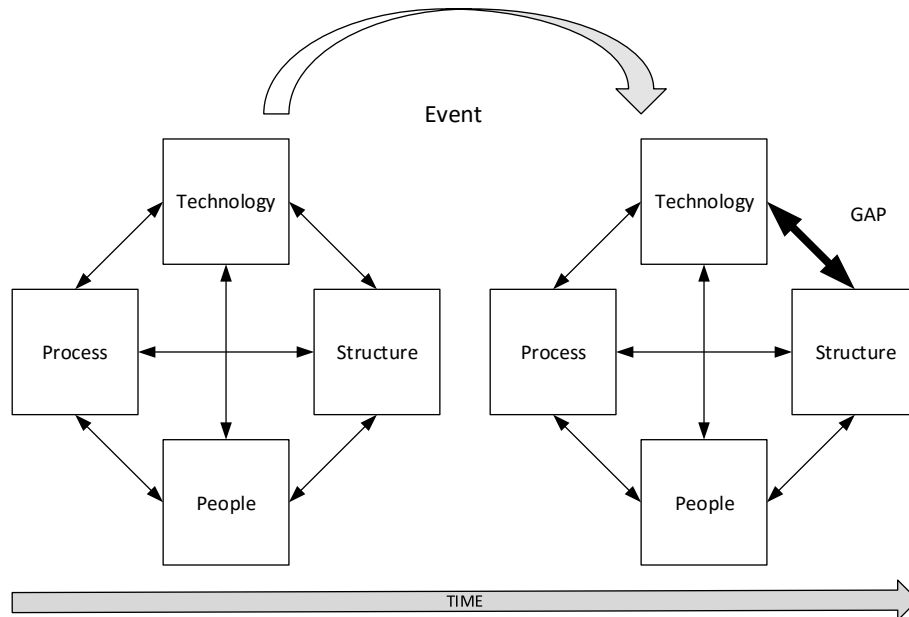
Figure 2-14 A Punctuated Equilibrium Model adapted from Leavitt's Diamond

Source: Newman and Zhao (2008, p. 411)

The application of an STS approach to information technology is expected to result in reduced failures and resolve many issues facing information technology projects (Bostrom & Heinen 1977).

2.5 IT Service Management

2.5.1 Background

ITSM is a strategy for the delivery of IT that focuses on IT services and customers by establishing agreements for the quality of IT services being provided. These are referred to as Service Levels. The delivery of IT is then managed by the IT organisation according to a series of processes to meet the business' agreed service levels. An IT service consists of a combination of people, processes and technology (Iden & Langeland 2010).

The focus of ITSM is to provide IT services to customers. This involves service level agreements and includes the day to day operations of the organisation that delivers IT operations. Previously the delivery of IT services had been focussed on technology

rather than customers. The developing view was the focus needed to move from technology to a customer and service quality focus. As a consequence of this focus shift the IT organisation becomes a service organisation. The changing goals are to deliver business through IT services (Iden & Langeland 2010). The dependency on IT has increased even more with the growth of e-business. Organisations report that the IT and the business goals are not aligned. ITSM is viewed as a strategy to achieve the alignment required (Huang et al. 2013). The significance of IT is apparent when it is noted that private companies in the USA spend more than 50 per cent of their capital investment on IT (Marrone et al. 2014).

The requirement for IT and ITSM should not be considered as relevant only for large organisations. Small and medium organisations are recognised for their contribution to increases in the economy. Globally software companies are quite small and yet this is an important industry. IT has been shown to improve productivity irrespective of the size of the organisation. ITSM is recognised as a management strategy to meet the needs of the organisation and provide quality IT services (Lema et al. 2015).

2.5.2 History and ITSM Streams

Historically IT services have focussed on technology whereas ITSM seeks to deliver process based IT services that meet the requirements of the customer. ITSM is wide ranging and includes multiple aspects of IT delivery by ensuring that IT services for an organisation are aligned for business purposes throughout the execution of planning and delivery (Winniford et al. 2009). The management of IT has matured and IT itself is increasingly complicated. The change in the IT requirements has driven the growth of ITSM (Pollard & Cater-Steel 2009).

ITSM has developed through the progression of two streams. The British Government created the ITIL stream but separately the United States stream is referred to as Service Level Management (SLM). Other IT service concepts have developed including Control Objectives for Information and related Technology (CobiT) as well as Business Service Management (BSM). Included with ITIL and SLM these concepts for the management of IT services are all considered part of the overall concept of IT Service Management (Winniford et al. 2009). Table 2-15 displays the major ITSM streams. Cots and Casadesús (2015) described

the area of ITSM as consisting of 'ITIL, CMMI-SVC, COBIT, ISO 20000, ISO 27001, LEAN IT, USMBOK, PMBOK, Six Sigma, PRINCE 2, ISO 9001, ValIT and ISO 38500'. ITSM was formally recognised in 2000 with the establishment of British Standard 15000. The standard is based upon ITIL and specifies the processes that form the framework of ITSM. The standard was focussed on IT operations (Galup et al. 2009). A further recognition of ITSM was provided when an international standard for ITSM, ISO/IEC 20000, was accredited in 2005 (Winniford et al. 2009). The recognition of British and international standards of ITSM indicates the changing IT environment and the need for IT to be delivered as a service (Galup et al. 2009).

ITSM has spread globally as a framework for providing IT services. An article published in 2010 stated that of 364 USA based IT managers 60 per cent were applying the ITSM framework or were intending to. Other studies globally produced similar findings (Pollard et al. 2010). The spread of ITSM occurred also through professional organisations. The IT Service Management Forum (ITSMF) is a global organisation of various country chapters consisting of over 6,000 companies and 40,000 individuals (itSMF 2016). A 2010 study identified that the more than 100,000 people are associated with bodies affiliated with the itSMF (Pollard et al. 2010). The global spread of ITSM is evident when considering that over five hundred organisations have met the global standards of ITSM and this is distributed across forty countries (Marrone et al. 2014). The majority of organisations that are implementing ITSM are implementing ITIL (Iden & Langeland 2010; Tan et al. 2009). However, ITIL is often implemented in conjunction with other ITSM frameworks such as CobiT, CMMI and ISO 9000 (Tan et al. 2009). ITIL has also been described as not a standard but a series of good practices and as such there can be no organisation that considers itself compliant with the requirements of ITIL (Cots & Casadesús 2015).

Table 2-15 ITSM Streams

IT Infrastructure Library ITIL	Service Level Management SLM	Business Service Management BSM	IT Governance	Control Objectives for Information and related Technology CobiT	ISO/IEC 20000
Developed in Britain in the 1980s Commenced as a set of books describing best practices in several areas of service management. Developed into a life-cycle view on service strategy, design, transition, operation, and continuous improvement.	US management philosophy commencing in the 1990s Focusses on operational delivery of IT services	Closely related to BSM Links business goals to IT infrastructure	Established from the accounting delivery that resulted in Sarbanes-Oxley legislation in 2002 An overall strategy that includes risk, finance and process management Strategic, not day to day management	Loosely groups 300 IT governance objectives Includes planning, acquiring, implementing, delivering, monitoring	ISO/IEC 20000 assigned by International Standards Organisation (ISO) Global standard brings together ITIL and SLM Includes specifications and a code of practice

Source: Winniford et al. (2009)

2.5.3 ITSM Benefits

Differing reasons are provided for the implementation of ITSM. There is a view ITSM will provide benefits including an improved IT service at a lower cost. Importantly it drives an organisation to deliver IT as a service to customers rather than just as a technology (Iden & Langeland 2010). Implementing ITSM may 'lead to improved customer satisfaction, increased quality of service, lowered production costs, clearer organisational structure, increased management control, a service oriented culture, as well as a uniform frame of reference for internal and external communications' (Iden & Langeland 2010, p. 103). Another view is that ITSM is implemented to improve quality of IT services and an ability to be flexible. Reducing the cost is not always considered the reason for implementing ITSM (Ming-Shian et al. 2011). The benefits of ITSM to an organisation have been described as 'helping IT organisations become more adaptive, flexible, cost effective, and service oriented' (Pollard & Cater-Steel 2009, p. 165). Studies conducted support the view that ITSM will assist in improving services to customers (Ming-Shian et al. 2011).

2.5.4 Implementing ITSM

The move from a technology organisation to a service organisation is a major change (Tan et al. 2009). Implementing ITSM will require new processes and tools to support the delivery of services. The change will require the culture of the organisation to adjust with changes to the organisation and for staff to receive training (Ming-Shian et al. 2011). The implementation of ITSM can be very costly and carries significant unanticipated risks (Huang et al. 2013). ITSM has been identified for its relationships with other socio-technical systems including ERP. There has been a significant amount of research into the implementation of IT including ERP but very little in the area of ITSM (Tan et al. 2009). Implementing ERP and ITSM have similar characteristics. ITSM is a based upon a series of processes and procedures whereas ERP is an IT software system. Implementations of both ERP and ITSM may be very costly and both necessitate business process changes to meet organisational requirements. The implementation of each can carry significant risk of failure (Tan et al. 2009).

2.6 The IT Infrastructure Library

Organisations are increasingly expecting improvements from the IT services to meet the requirements of rapidly changing business needs. To achieve this, the IT environment of applications, infrastructure and networks needs to be able to be responsive. IT needs to be able to change in accordance with changing business requirements ITSM has been identified as providing organisations with the ability to be more responsive. ITIL, as an ITSM framework, has developed to provide the agility in IT organisations that is needed (Pollard et al. 2010). ITIL has been widely adopted as a practice for providing improved management of IT services (Bouraad 2010). As organisations move from a hardware and software focus to a service focus ITSM and ITIL are increasingly being adopted. The organisations consequently are adopting consistent process and a single model (Love & Ness 2016).

2.6.1 Background

ITIL is a process based framework that provides guidance to manage the IT related activities of IT divisions and an organisation as a whole. Processes consist of formal activities designed to produce specific outcomes (Iden & Langeland 2010). ITIL is a series of best practice benchmarks that can be applied to the management of IT services (Hesson et al. 2012).

2.6.2 History

ITIL was developed initially by a British Government department during the 1980s to ensure that Government computer centres were managed efficiently (Pollard & Cater-Steel 2009). The British Government department, the Central Computer and Telecommunications Agency (CCTA), developed ITIL from a series of best practices identified within the IT industry. The original objective was that the delivery of IT services was not dependent upon the external IT suppliers (Iden & Langeland 2010) and to improve the effectiveness of the delivery of IT services and to reduce cost (Tan et al. 2009).

The growth of use of ITIL was not significant until the mid-1990s after a second version of was produced. ITIL Version 2 was released in 2000 (Iden & Langeland 2010). ITIL has been updated to meet the growing and changing requirements of IT organisations with increasing use on a larger scale during the 1990s (Tan et al. 2009). The second version of ITIL consisted of two main parts; service delivery and service support (Pollard & Cater-Steel 2009). The service support components of ITIL provide the capability for the effective management of IT services. Service delivery provides the practices for the actual management of IT services (Hesson et al. 2012). Table 2-16 presents the processes and functions of the two volumes of ITIL Version 2.

Table 2-16 Processes and Functions of ITIL Version 2

Service Support	Service Delivery
Configuration Management	Service Level Management
Incident Management	Capacity Management
Problem Management	Continuity Management
Change Management	Availability Management
Release Management	IT Financial Management
The Service Desk	

Source: Hesson et al. (2012)

The UK Office of Government Commerce continued development on ITIL and released Version 3 in 2007. The significant change incorporated in Version 3 was a service lifecycle view (Tan et al. 2009). Table 2-17 presents the five stages of the ITIL version 3 lifecycle with descriptions of the stages. ITIL has been updated to meet the growing and changing requirements of IT organisations with increasing use on a larger scale during the 1990s. Version 3 developed from version 2 and increased the number of core processes from ten in two books (Tan et al. 2009) to thirty processes documented in five books (Iden & Langeland 2010). ITIL is recognised as the global standard for ITSM with the international standard for ITSM, ISO/IEC 20000, based upon ITIL (Iden & Langeland 2010). Certifications in ISO/IEC 20000 rose rapidly until 2009 but since then the rate of certification has slowed and in Europe has declined. However, the rate of certifications in Asia and North America continues to grow (Cots & Casadesús 2015). ITIL version 3 is also considered to be the IT industry best practice for ITSM. A best practice represents an efficient and effective method of performing actions based upon a method process (Galup et al.

2009). The five stages of the ITIL version 3 service lifecycle are presented in Table 2-17.

Table 2-17 ITIL Version 3 Service Lifecycle

Service Strategy	The phase of defining the guidelines for creating business value and achieving and maintaining a strategic advantage
Service Design	The phase of designing and developing appropriate IT services, including architecture, processes, systems and tools for ITSM, measures and metrics, policy and documents, in order to meet current and future business requirements
Service Transition	The phase of planning and manging the realisation of new and modified services according to customer specifications
Service Operation	The phase of managing and fulfilling all activities required to provide and support services, in order to ensure value for the customer and the service provider
Continual Service Improvement	The phase of continual improvement of the effectiveness and efficiency of IT services against business requirements

Source: Bernard (2012, p. 19)

In 2013 the British Cabinet Office entered into a joint venture company with Capita plc to manage the British Government's best practice portfolio. ITIL was included in the joint venture announced by the British Government (UK Government 2013). ITIL is now a registered trade mark of AXELOS Limited (Axelos 2015c). The international organisation that supports ITIL, the IT Service Management Forum (itSMF), has promoted the growth of ITIL to a global audience of public and private organisations (Tan et al. 2009).

ITIL is a referred to as a framework and does not require a mandated set of processes to be applied or expected to be followed precisely. Organisations can determine the ITIL processes and functions that are required for the needs of the organisation. It is not expected that all processes and functions will be implemented. The organisation should select the processes and functions they need to achieve their goals and objectives (Hesson et al. 2012).

Organisations are increasingly requiring improved IT services. ITIL is being adopted progressively by organisations around the world. A 2008 survey of 364 IT leaders in the USA provided a view of the growth of ITIL. Of the leaders surveyed 60 per cent were already applying ITSM practices. ITIL was known or used by 72 per cent of those surveyed (Pollard et al. 2010). Forrester Research received a 30 per cent increase in enquiries about ITIL in the 12 months to July 2008 when compared to the

previous year. A 2008 global study identified that 87 per cent of organisations applied ITIL processes and 33 per cent were planning to implement ITIL (Pollard & Cater-Steel 2009). ITIL was initially applied to the infrastructure area of the IT organisation as it increased in popularity globally. ITIL is now growing in use for the management of application services (Heston & Phifer 2011).

2.6.3 Benefits

Although the implementation of ITIL requires a validation of the benefits that will be expected there has been little research in the area of determining the benefits (Tan et al. 2009). It could be anticipated that organisations implement ITIL to receive benefits to their IT services. More research is required into why organisations are adopting ITIL (Pollard & Cater-Steel 2009). A number of articles however have addressed the benefits that have been identified. Implementing ITIL and conducting activities in the ITIL framework has been linked to improved performance in IT operations (Pollard & Cater-Steel 2009).

Of the studies conducted service quality and customer satisfaction have been identified as key benefits of implementing ITIL (Marrone & Kolbe 2011; Pollard & Cater-Steel 2009; Shang & Shu-Fang 2010; Tan et al. 2009). Shang and Shu-Fang (2010) stated that improvements to the delivery of IT services and customer satisfaction is achieved by making better use of IT support resources, providing more reliable services that are available when required and meeting the IT requirements of all users of the IT services. The standardisation of service is also recognised as a benefit of implementing ITIL (Marrone & Kolbe 2011) with standardisation provided as a reason for improved greater efficiency (Pollard & Cater-Steel 2009; Tan et al. 2009). An improvement in the return on IT spend has been found by Marrone and Kolbe (2011) in a number of academic articles.

Table 2-18 presents a summary of the benefits of ITIL found in credible academic literature.

Table 2-18 Summary of Benefits of ITIL

Improvement of…	Hochstein et al. (2005)	Potgieter et al. (2005)	Marrone et al. (2010)	Cater-Steel et al (2008)	Cervone (2008)
Service quality	X	X	X	X	X
Standardisation of service	X		X	X	
Customer satisfaction		X	X	X	
Return on investment			X	X	X
Reduction of downtime					
Benefited from best practice experience of others	X				
Financial contribution control				X	
First-call resolution rate				X	
Morale of IT				X	

Source: Marrone and Kolbe (2011, p. 366)

Table 2-19 presents the benefits identified by Pollard and Cater-Steel (2009) from research articles.

Table 2-19 Benefits of ITIL Implementation

Benefits of ITIL Implementation Identified from Research Articles
Customer satisfaction
Direct relationship between improvements in operational performance and increased activities in the ITIL framework
Improved client / service orientation and quality of IT services
Greater efficiency due to standardisation, optimising of processes and process automation
Transparency and comparability through process documentation and process monitoring
Improved focus on ITSM
More predictable infrastructure
Improved consultation with IT groups with the organisation
Smoother negotiation of service level agreements
Seamless end to end service

Source: Pollard and Cater-Steel (2009)

2.6.4 Education and Qualifications

Training courses to improve knowledge and skills are available to support the use of ITIL by people and organisations. Training in ITIL processes is available through the joint venture company that is the registered trade mark owner of ITIL, Axelos Limited. Five levels of training qualifications have been established (Axelos 2015a). The training courses have been adjusted to support ITIL Version 3 and form an ITIL Qualification scheme. In excess of two million people have achieved ITIL certification (Bernard 2012). Table 2-20 displays the levels of ITIL qualification including a description of each. Training is provided by accredited training organisations or can be studied privately. The training offered by Axelos is intended to improve the skills and knowledge in ITIL. A progression of training constituting a career path can be undertaken (Axelos 2015b).

Table 2-20 ITIL Certification Courses

Qualification Level	Description of Requirements
Foundation Level	The entry level qualification providing a basic knowledge of the primary theories and terminology of the ITIL Service Lifecycle
Practitioner Level	Focusses on implementation of ITIL to meet the specific business needs
Intermediate Level	Based upon specific modules that can be selected according to the requirements of the organisation or practitioner
Expert Level	Applies the entire ITIL range of processes and provides significant skills and knowledge.
Master Level	Able to describe and support a personal account in a practical submission form displaying ITIL knowledge and practices

Source: Axelos (2015b)

2.6.5 Implementing ITIL

Although ITIL is becoming increasingly adopted not all implementations are successful. An Australian survey of 108 businesses that had implemented ITIL identified that only 56 per cent believed that the implementation had at the least achieved their expectations (Pollard & Cater-Steel 2009). However, there is some confusion as to how ITIL should be implemented. ITIL does not provide information regarding a strategy for implementation (Pollard & Cater-Steel 2009).

It was noted in 2009 that there had been very little academic research into the adoption of ITIL even though there is not a clearly defined implementation strategy.

Although it has also been stated that research into ITIL has increased (Iden & Eikebrokk 2015) the literature review did not identify significantly more research. At least one study has identified that there is a concern with the success of the implementations (Pollard & Cater-Steel 2009). Implementing ITIL will have a major effect on the IT division of an organisation. Implementing ITIL is very complicated and will affect all members of the IT staff (Iden & Langeland 2010) leading to changing roles and work requirements (Iden & Eikebrokk 2014a).

Typically the organisational structure may change, accompanied by new roles and modified work practices. The staff will need to acquire new skills and understand the processes (Iden & Langeland 2010). Implementing ITIL can result in disputes between stakeholders both during and after the completion of the program. Conflicts between inter-organisational groups over the cost of the program have resulted in financial restrictions reducing the effectiveness of the program (Shang & Shu-Fang 2010). Implementing ITIL will need to be planned and thoroughly costed (Pollard & Cater-Steel 2009). The ITIL implementation needs to be viewed as a long term program with ongoing continuous improvement (Shang & Shu-Fang 2010). Without this approach it could be anticipated that the implementation will not be successful (Pollard & Cater-Steel 2009). Fully implementing ITIL may require a number of years requiring the commitment of managers and employees for that time (Iden & Eikebrokk 2014a).

2.6.5.1 ITIL Implementation Strategies

Implementing ITIL is complicated. The complexity is affected by the nature and intentions of the organisation. The impact of implementing ITIL is wide spread. Each staff member may be affected, new roles created and a new way of working introduced. New skills will be required. The implementation of ITIL could last for a number of years (Iden & Langeland 2010). Organisations that have traditionally focussed on their technology may identify issues with transferring to a customer service organisation (Iden & Langeland 2010).

Organisations are implementing ITIL in different ways and with different strategies. Service Desk, Incident Management, Change Management and Service Level Management are the most commonly implemented and often in that sequence of

implementation (Iden & Langeland 2010). ITIL Version 3 does not provide advice on the processes or functions that should be implemented or a preferred sequence of implementation (Lema et al. 2015). In the Service Transition book Section 5,ITIL 2011 provides a focus on the management of people during a transition. The information refers to the implementation of a new or changed service rather than an ITIL implementation. Reference is made to organisational change but not how it should be applied. The only model of organisation change referred to or is recommended is Kotter's eight steps to transform the organisation (Axelos 2011b). In Section 8.4 of the ITIL 2011 Continual Service Improvement book a description is included on the application of the Kotter approach to organisational change to improve service management (Axelos 2011a). However, the ITIL books do not consider other organisational change strategies, approaches or types of change.

A study by Gacenga et al. (2010) identified the top ten most commonly implemented processes as Change, Incident, Problem, Service Level, Configuration, Service Catalogue, Request Fulfilment, Capacity, Event and Service Continuity Management. Although the Change Management process as the first process implemented has been identified in a number of organisations there is not an acknowledged preference for process implementation (Pollard & Cater-Steel 2009). Organisations predominantly implement operational processes rather than tactical and strategic processes. One study reported that operational processes of Incident, Change and Problem Management were adopted by more than fifty per cent of organisations. In comparison, to the only tactical or strategic process with adoption over fifty per cent was SLM (Marrone et al. 2014). The majority of organisations that intend to implement ITIL have at least some processes already in place (Iden & Eikebrokk 2014b).

A study of four organisations that implemented ITIL identified that two organisations performed a radical implementation of all processes at once and the other two used a phased strategy where processes were deployed over time. A strategy of implementing all business processes and services at one time is considered possibly the most suitable for small organisations with reduced implementation durations. A phased approach of gradually deploying business processes is being used with

some success by larger organisations that may have some existing processes. This strategy takes longer and requires greater funding (Pollard & Cater-Steel 2009)

Implementing ITIL is complicated and will have an impact throughout the IT division and the organisation as a whole. There will be a need for change in the way in which work is performed, the structure of the organisation and the roles of the IT staff. There will be a requirement for new skills and a new way of thinking about delivering IT services (Iden & Langeland 2010). Implementing ITIL is more than simply the implementation of new business processes. The ITIL implementation calls for a significant organisational change. The organisation must change the culture of the staff, training will need to be provided, new IT tools are introduced and the organisation undergoes restructuring (Ming-Shian et al. 2011). The ITIL processes are supported by IT systems that enable the management of processes. There is therefore the requirement to select and implement the IT system to support the processes (Iden & Langeland 2010). An ITIL implementation is a combination of changes to processes and technology (Iden & Langeland 2010). There will be a requirement to engage resources across the organisation and in different roles and to manage processes (Shang & Shu-Fang 2010). It can be anticipated that an ITIL implementation will span a significant period of time, typically over a number of years to completion (Iden & Langeland 2010). Consequently an ITIL implementation will require considerable preparation and budgeting (Pollard & Cater-Steel 2009). The implementation of ITIL could be considered to be a four step process. The existing processes are identified, become capable in ITIL requirements, remodelling of the current processes to ITIL requirements and the implementation of ITIL processes (Iden & Eikebrokk 2014b).

ITIL researchers have turned to ERP research studies because of common implementation characteristics. A primary common feature is that they are both systems that are based upon processes and that implementation requires change to business processes. A key factor of the research into ERP implementations is that there is a need to change culture in an organisation and a need to use a change management approach to ensure that barriers to change are overcome (Tan et al. 2009). A research case study into an ITIL implementation identified that a change management approach is necessary to ensure that the IT division moves from

delivering technology to delivering services. The change management approach enabled the organisation to transform (Tan et al. 2009).

Researchers have identified the implementation of ITIL as similar to the implementation of other frameworks including BPR (Pollard & Cater-Steel 2009) and ERP (Tan et al. 2009). In the absence of ITIL studies researchers have looked to ERP implementations because of the similarity to ITIL implementations (Tan et al. 2009).

2.6.5.2 Critical Success Factors

The research into ITIL implementations that has been conducted to date is based primarily on critical success factors. A recent review of research on ITIL implementations reported an Australian study of 105 organisations identifying six critical success factors, a study of six German companies identified six critical success factors, a longitudinal case study identified seven critical success factors and a study of four organisations identified six critical success factors (Iden & Langeland 2010). These studies did not address how the implementation should ensure that the critical success factors were applied. One study did consider the types of implementation strategy applied. This research reviewed four organisations and identified that two implemented all the selected processes at one time, and the other two used a phased approach implementing the processes gradually (Pollard & Cater-Steel 2009).

Table 2-21 displays an adaption from an article by Pollard and Cater-Steel (2009) comparing the results of CSF studies. Key points emerge from this research regarding important factors for ITIL implementations. Each of the studies referred to recognition of the criticality of management support and training. Pollard and Cater-Steel (2009) stated that each study identified managements support as the most important CSF. It was noted that if management support was not initially provided, it was a necessity to obtain the support during the implementation. Management support provided finance for implementation requirements including training and tools and confirmed the requirement to conform to process and policy (Pollard & Cater-Steel 2009). Training and staff awareness was acknowledged by each study as a CSF.

The training assisted in overcoming resistance to the ITIL implementation (Pollard & Cater-Steel 2009). Three of the four studies recognise the importance of the selection of the software tool. Three new CSFs were identified by Pollard and Cater-Steel (2009). Process priority, an ITIL friendly culture and customer focused metrics have not previously been identified in CSF studies into ITIL implementations.

Table 2-21 Comparison of CSF Studies

Critical Success Factors	ITIL Implementations			ERP Implementation
	Pollard & Cater-Steel (2009)	Hochstein et al. (2005)	Tan et al. (2007)	Somers & Nelson (2001
Top Management Support	X	X	X	X
Training / personnel development	X	X	X	X
Virtual project team	X	X		
Careful software selection	X		X	X
Use of consultants	X			X
Interdepartmental communication and collaboration	X			X
NEW				
Process Priority	X			
ITIL-friendly culture	X			
Customer focused metrics	X			

Source: Adapted from Pollard and Cater-Steel (2009, p. 173)

2.7 Implementing ITIL – an STS and Change Approach

Applying an STS approach to an organisational change has been considered as a possibility that may result in positive outcomes (Galliers & Baker 1995). The Leavitt Diamond, as an STS model, shows that work systems are related and that change can affect many parts of an organisation. Considering an organisation in the context of

multiple components that interact when planning change is an STS approach to change (Bostrom & Heinen 1977). Designing a new work system must take into consideration social and technical aspects of an organisation as well as the four components of technology, structure, people and task (Bostrom & Heinen 1977). Figure 2-15 displays a representation of the interaction of an ITIL implementation with an STS.
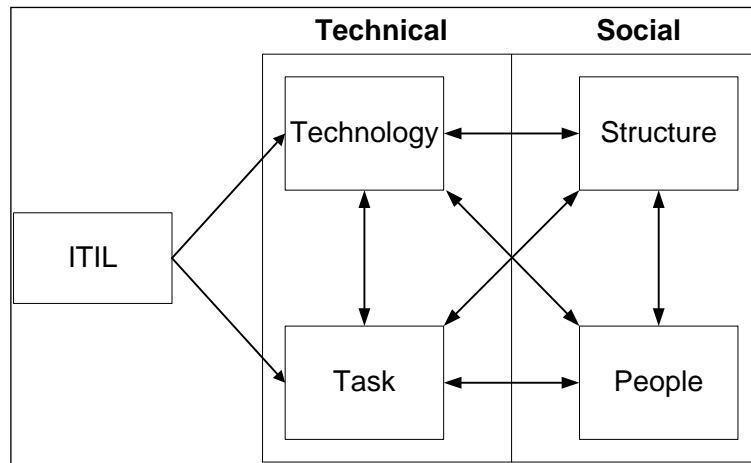
Figure 2-15 An ITIL Implementation Interacting with an STS

Source: Adapted from (Bostrom & Heinen 1977, p. 25)

ITIL is a series of business processes supported by an IT system (Iden & Langeland 2010) and consequently will impact both the task and technology organisational components. This could create an imbalance that would need to be corrected by changes to structure and people. Figure 2-15 displays the impact of the ITIL implementation on an STS. As depicted the ITIL implementation directly affects the STS components of technology and task. A combination of an STS approach with a planned change strategy for a BPR implementation is displayed in Figure 2-16. The planned change model on the left displays the business strategy at the centre of the model. The planned change model displays the change pushed out to the components of the framework (Hsiao & Ormerod 1998). The socio and technical components are represented as in the Leavitt Diamond but with the additional component of strategy, referring to the change strategy. The BPR implementation model on the right displays the business strategy in the centre pushing change to the components of the framework but with a direction of change locating a path from process to technology to structure and to tasks (Hsiao & Ormerod 1998). In support

of the recommendations the organisational change strategy identified in this model represents a planned change strategy and STS approach.
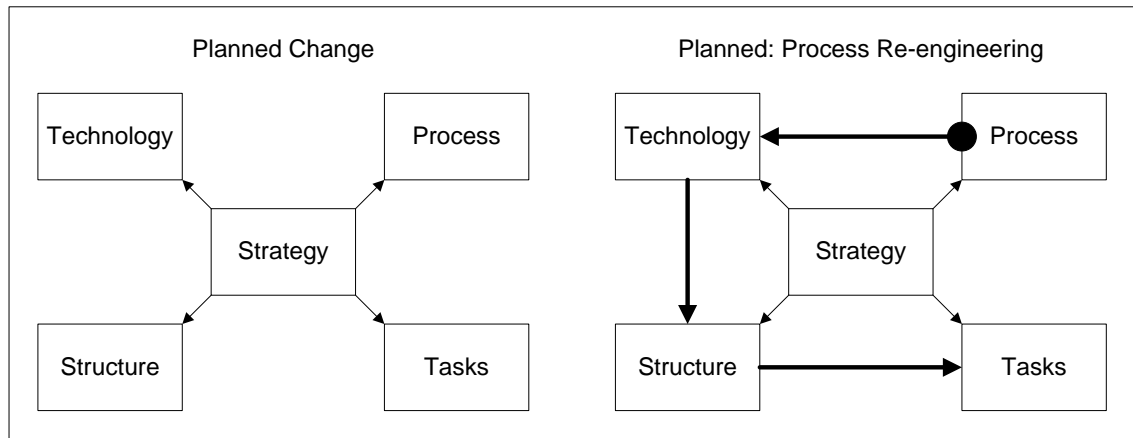
Figure 2-16 A Planned Change Strategy and BPR STS Planned Change

Source: Adapted from Hsiao and Ormerod (1998, pp. 39-40)

2.8 Gaps in the Literature

Despite the increasing adoption of ITIL worldwide the amount of research that has been conducted into how it is implemented has been sparse (Iden & Langeland 2010; Pollard & Cater-Steel 2009). A more recent review of ITIL literature has identified that more research into ITIL has been conducted (Iden & Eikebrokk 2015) but the overall amount is still not significant. This is a significant gap in the ITIL related research literature regarding implementation strategies or the strategies employed for successful implementations. Implementing ITIL has been found to be complicated and will have widespread implications on staff, the way in which work is performed, organisational structure and roles (Iden & Langeland 2010) and yet the academic research has not included implementation strategies (Pollard & Cater-Steel 2009). Difficulties with ITIL implementation is common (Iden & Langeland 2010) with one survey of 108 Australian organisations identifying that only 56 per cent considered that the implementation had at least achieved their expectations (Pollard & Cater-Steel 2009). The official ITIL books published do not include information as to how ITIL should be implemented (Pollard & Cater-Steel 2009).

The research into ITIL implementations that has been conducted is based primarily on critical success factors. Iden and Langeland (2010) and Pollard and Cater-Steel

(2009) have published articles focussing on CSFs of ITIL implementations however, these studies did not address how the implementation should ensure that the critical success factors were managed. One study did consider the types of implementation strategy applied. This research reviewed four organisations and identified that two implemented all the selected processes at one time, and the other two used a phased approach implementing the processes gradually (Pollard & Cater-Steel 2009). Other research into ITSM, and including ITIL, has focussed on process improvement or a maturity assessment model (Huang et al. 2013). The research did not identify how ITIL had been implemented or how organisational change was applied. A further study has also identified that there is concern over the use of current methods to assess whether existing ITSM processes require improvement (Shrestha et al. 2016).

There is a need to research how organisations are implementing ITIL and what factors influence the success of the implementation (Pollard & Cater-Steel 2009). Organisations seeking to implement ITIL are not able to review studies or literature that can provide them with an understanding of how ITIL could be implemented to provide an outcome that will achieve their expectations. There has been recognition that benefits would be gained through the study of ITSM implementations (Winniford et al. 2009). A consequence of the difficulties encountered has been the identification of a need for research focussing on ITIL implementations (Iden & Langeland 2010).

As stated earlier, the similarity of the implementations of ERP and ITIL has been recognised (Tan et al. 2009) and research into the failure of ERP systems implementation has been identified as related to STS issues (Shah et al. 2011). Research has identified that an ERP implementation applying an organisational strategy has been successful (Newman & Zhao 2008) and there is consideration that applying an STS approach to organisational change may provide a successful outcome (Galliers & Baker 1995). However no research has been found on implementing ITIL with an organisational change strategy that includes an STS approach. This is considered to be a gap in the literature. The STS approach to change for ERP and BPR has been researched and the need for the technical and social components to receive an equal focus has been identified

(Galliers & Baker 1995). Researchers have made use of prior ERP studies by reviewing ERP implementation literature to obtain information and determine a course to follow (Tan et al. 2009). It is therefore appropriate that research into ITL implementations could consider prior ERP research into an STS approach to change as a direction that is yet to be taken and a gap to be filled.

Another area lacking research attention is the measurement of success or failure of ITIL implementations. Pollard and Cater-Steel (2009) described a series of benefits obtained from the implementation of ITIL as summarised in Table 2-19. The benefits may provide an indication of achievement of some requirements but are not success criteria. Researchers have sought to identify how IT projects should be managed but one issue identified is the measure applied to success (Eveleens & Verhoef 2010). Research into IT projects has considered three-way success criteria of meeting budget, schedule and requirements. A project could be measured according to meeting all three criteria or one or more of the criteria. Other success criteria have included meeting the customer's expectations or satisfying the customer. However, inadequate specification of the requirements may result in an IT project that meets requirements but is not a useful service (Lech 2013). A three point scale of IT project success has been proposed: success, challenged or impaired (Eveleens & Verhoef 2010). Success indicates the project is completed within schedule and budget and has full functionality. A challenged project is described as delivering some functionality but over budget and schedule. An impaired project is one that is cancelled (Eveleens & Verhoef 2010). The measurement of the success of an IT project has not been without issue as identified in the literature and has not been applied to ITIL implementations.

2.9 Chapter Summary

The literature review showed that there is little research into how organisations implement ITIL. To address the research problem that organisations will not receive the expected benefits if the ITIL implementation is unsuccessful there is an identified need to determine how organisations implement ITIL and what factors influence the success of the implementation. The existing body of research has not addressed this problem. The literature review included organisational change strategies with a

particular focus on an STS approach to organisational change. The literature review also included the key theories of ITSM and ITIL. The implementations of ERP and BPR were examined in the literature review because there is existing research into their implementation and because it has been identified that their implementations have similarities with the implementation of ITIL. To address the research problem, a research methodology was determined and is discussed in Chapter 3.

3 Research Methodology

3.1 Introduction

Chapter 2 reviewed the literature associated with this research. The literature review included organisational change theories with particular reference to planned change and STS change. The Leavitt Diamond was discussed as a model of STS organisational change. The implementations of ERP and BPR have been extensively researched and were included in the literature review as STS change. The research into the ERP and BPR implementations identified that an STS approach to organisational change may reduce the failure rate of the implementations. The literature review included the theories of ITSM and ITIL and identified that there has been little research into ITIL implementation. The similarity of ERP and ITIL implementations has been recognised. The literature review considered that an STS approach to an ITIL implementation, as identified in ERP implementations, is appropriate for research.

Chapter 3 considers research methodology and the research design. The objective of this section is to describe and justify the approach to the research. This will include explanations for the research paradigm and the methods by which the empirical data will be collected and analysed. Chapter 3 consists of six major sections. §3.2, §3.3 and §3.4 discuss the research philosophy, approach and method. These three sections describe the theoretical considerations for the research and that the research will be conducted as multiple case studies. §3.5 describes the design of the case study approach including the number of cases and the selection of cases. This section also describes the data collection techniques to be applied of in-depth interviews and secondary data. The data collection process is discussed in §3.6. This section includes the approach to organisations and the conduct of interviews. The final section, §3.7, discusses the analysis of the collected data.

3.2 Research Philosophy

For the purposes of this research a positivist epistemological multiple case study approach has been used. This approach is accepted and widely used in information systems research (Cavaye 1996). The research approach has been selected because it

will support the collection of data necessary to address the research problem. The epistemological view of positivism is that factual data is obtained by observation (Saunders et al. 2009). The positivist epistemology identifies that the researcher is independent of the subject being researched (Orlikowski & Baroudi 1991; Saunders et al. 2009). The researcher by remaining independent does not affect the subject or be affected by the subject being investigated (Holden & Lynch 2004). In alignment with the positivist approach the researcher is independent of the organisations being researched and the participants in the research. The interpretation of the data is objective and it is to be expected that findings will be observable. The research design applies a case study methodology that aligns with the epistemological and ontological assumptions described. Therefore the epistemological positivist approach is considered to be the most appropriate for the research to be conducted.

3.3 Research Approach

The identification of a research design was considered as it has a significant impact on the research. Identifying the research approach assists in determining the research design, formulates suitable research strategies and provides a capability to adapt the research design to overcome limitations (Saunders et al. 2009). Two approaches considered for the research are inductive and deductive. The inductive approach refers to conducting research that builds a theory (Saunders et al. 2009). Zikmund et al. (2013, p. 44) described the inductive approach as 'the logical process of establishing a general proposition on the basis of the observation of particular facts'. The deductive approach is used when there is a requirement to test a theory, review the outcomes and amend the theory if necessary (Saunders et al. 2009). The deductive approach has been described as 'the logical process of deriving a conclusion about a specific instance based on a known general premise or something known to be true'(Zikmund et al. 2013, p. 44).

The intention of the research conducted is not to test a theory but to build a theory. The approach is therefore inductive. The prior research into the organisational change associated with ITIL implementations is not sufficient to enable a deductive approach. The research intends to build a theory regarding ITIL implementations and organisational change. An inductive approach is capable of answering questions of

how and why in areas of research that have not been previously conducted (Eisenhardt & Graebner 2007). A deductive approach is more suitable if the research is already extensive however an inductive approach enables the development of the theory. The inductive approach is appropriate when there is a requirement to build a theory (Saunders et al. 2009). An inductive approach was applied to this research. Theories will be developed from the research conducted into successful ITIL implementations.

3.4 Research Method

This section describes the purpose of the research and the research strategy.

3.4.1 Research Purpose

The purpose of the research is to identify the organisational change strategies employed by organisations that have effected a successful ITIL implementation. This research addresses the research problem that the unsuccessful implementation of ITIL may result in the lack of expected benefits and poor return on a significant investment for organisations. There is a need to determine how organisations implement ITIL and the factors that influence the success of the implementation. The three most commonly used research purpose classifications include exploratory, descriptive and explanatory (Saunders et al. 2009). The three types of research build upon each other. Exploratory research develops the base for descriptive research which in turn forms the base for the explanatory research. The explanatory research cannot be undertaken until there is already a very good knowledge of the research object (Zikmund et al. 2013). This research was conducted as exploratory research.

The study conducted sought to build theory in regards to the organisational change aspect of ITIL implementations. The exploratory research purpose fulfilled the requirement more appropriately than the descriptive or explanatory research types. The exploratory research purpose is considered appropriate because this research is not expected to produce definitive results from which a direction can be identified. It is considered an initial stage but with an anticipation that further research will follow (Zikmund et al. 2013). In alignment with Saunders et al. (2009) this

exploratory research has a purpose as a developer of the problem and of investigating something that has not previously been investigated.

The descriptive and explanatory research types have been considered as not suitable for this research. Descriptive research represents a depiction of the people, actions and situations of the phenomenon being investigated (Saunders et al. 2009). Whereas exploratory research is conducted as a first step, descriptive research is not undertaken until there is a good understanding of the phenomena (Zikmund et al. 2013). The understanding of the phenomena relating to the implementation of ITIL needs to be developed and this research, as exploratory research, seeks to develop that understanding. Explanatory research seeks to understand relationships or what happens in response to actions or circumstances (Zikmund et al. 2013). This research may identify relationships but the intention is to build the theory at this time, not to explain the relationships between variables.

Although the research draws on literature regarding ERP and BPR implementations as STS change there is not the intention to apply that as a basis for either explanatory or descriptive research. The intention of this research is not to test theory but to build theory for the organisational change strategies applied to successful ITIL implementations. A starting point for the research is the literature relating to the implementation of ERP and BPR. There is currently no identified theory that applies to the organisational change strategies influencing the success of the implementation of ITIL.

3.4.2 Research Strategy

The selection of the positivist research paradigm and inductive approach have been stated and explained in the previous sections. This section will present and justify the use of case studies as proposed research method. It is considered that in the initial stages of a business theory the case study is the most suitable tool to use. The case study can both test a theory and be used to develop a theory. The case study is suited for management research because it is used for actual problems and produces and provides management knowledge (Gibbert et al. 2008). The case study research can address the requirements of the exploratory research purpose (Yin 1981).

A multiple case study approach using multiple data collection techniques has often been previously applied to positivist research and has been selected for this research. An analysis of case study research by Dubé and Paré (2003) reviewed 1,691 articles from academic journals over a 10 year period to 1999. Case research as the primary research method comprised 11 per cent of the articles although another four per cent used case research but not as the primary method. Of the articles that used case research as the primary research method, 87 per cent used a positivist paradigm. The study also identified that 30 per cent of the case study research was exploratory. The research method included 60 per cent as a multi case design and for the exploratory research 85 per cent used multiple data collection methods.

The case study provides for flexibility in the research because it can enable data collection for both quantitative and qualitative methods (Eisenhardt 1989; Yin 1981). Pertinent to this research the case study has some significant attributes. Importantly the case study enables a study of the phenomenon in its own environment (Benbasat et al. 1987) as it is not possible to conduct the research outside the subjects' own settings. The case study enables the collection of data in more than one way and it enables multiple organisations to be the subject of the research (Benbasat et al. 1987). These are key considerations that provide a case study as a suitable research method to investigate ITIL implementation. The case study research method provides a capability to research multiple cases simultaneously with an outcome that is enhanced through increased research findings (Benbasat et al. 1987). A case study can combine data collection methods fulfilling both qualitative and quantitative methods. Data can be collected from diverse sources including interviews, documentation and observations which are qualitative methods as well as the quantitative method of questionnaires (Dubé & Paré 2003).

The case study is very suited to the inductive approach selected for this research. The case study can be applied to enable the development of a theory by using one or multiple cases. The theory is then being built upon the empirical data. The case study provides detailed accounts of an occurrence or circumstance and from a variety of sources. The case study will often be based upon the situation or occurrence that has taken place in recent times. An important component of the building of theory from the case study is that each case study is an occurrence in its own right but

collectively with others the developing theory can be examined across both the differences and similarities of the cases (Eisenhardt & Graebner 2007).

The case study research method provides the appropriate characteristics for the research and is consistent with research methods for business and information systems. The case study is suited for IT service management research because it is used for actual problems and produces and provides management knowledge (Gibbert et al. 2008). Case studies are suitable for qualitative research with supporting data available from a number of different sources (Yin 1981). The case study approach enables multiple organisations to be the subject of the research (Benbasat et al. 1987). Building theory from case studies is accepted and pertinent to the research. The multiple case study approach provides the data and evidence for the development of theory (Eisenhardt & Graebner 2007). Studying multiple organisations as case studies is an important capability because it enables reproduction of the proposal and further development of the theory. Numerous case studies provide confirmation of the findings and remove the risk of incorrect conclusions (Eisenhardt 1989). These are key considerations that provide a case study as a suitable research method. The case study research method provides the appropriate characteristics for the research and is consistent with other frequently used research methods for business and information systems.

3.5 Case Study Design

This section describes the design of the case study approach applied to the research. Included in this section are the number of cases, how the cases are selected and the methods of data collection. The case study design is based upon a multiple case study approach.

3.5.1 Unit of Analysis

The unit of analysis needs to be suitable to the study undertaken (Benbasat et al. 1987) and was considered when defining the problem (Zikmund et al. 2013). The unit of analysis could include people, groups or an organisation and could include a specific project (Benbasat et al. 1987). This research investigates the implementation of IT service management in Australia. The unit of analysis therefore includes

organisations that are in Australia or are based in Australia. IT service management is implemented into the IT departments of organisations but there is a wider impact across the whole organisation. The unit of analysis for the research is the IT department of Australian organisations. The IT department of the organisation is the part of the organisation that delivers the IT services according to the processes, creates and manages the new roles, requires new skills and is the primary user of the supporting technology. Representatives of the IT departments will be able to identify if the ITIL implementation has been successful and provide the details of the implementation project.

3.5.2 Number of Cases

The multiple case study approach provides a better foundation for building a theory than a single case. While it is recognised that the single case can be selected because it is unusual or it may provide an extreme example, multiple cases allow for an evaluation of varying circumstances or phenomena which is better for developing a theory than a single case. Multiple cases are selected because they provide a variety of empirical evidence which can be used for comparison to validate whether the findings are unique or occur in other cases (Eisenhardt & Graebner 2007). The multiple-case strategy will enable a comparison of the findings in one case to be compared to the findings in other cases. It is recognised that a theory built from multiple cases is better for testing than a case study of only one occurrence (Eisenhardt & Graebner 2007).

A case study approach could possibly consist of only one or a number of cases and the detail of the examination could vary (Eisenhardt 1989). The building of theory could begin with a sample of between four and ten cases and this will provide sufficient data to enable a cross case analysis (Gibbert et al. 2008). It has been considered that the suitable number of cases should depend on whether more value could be gained from additional cases (Eisenhardt 1989). The number of cases suitable for multiple case research varies in existing literature. Eisenhardt and Graebner (2007) made the point that four case studies provide four times the data for analysis as one case study. This demonstrates the value of increasing the number of cases studied. In an earlier article by Eisenhardt (1989) the case study was reviewed for suitability for building theory. Seven studies were documented. Five of the seven

studies included between six and ten cases. Two of the studies included one case only, one study comprised six cases, three studies comprised eight cases and one study comprised ten cases. In alignment with literature provided, the sample size is determined to be in the range of eight to ten IT departments of Australian organisations.

It was anticipated that the actual number of organisations contributing to the research would be dependent upon factors including availability of organisations, willingness to participate and geographic location. Further considerations regarding the number of cases include financial and temporal limitations. The research is provided with limited funding for the expenses incurred to progress and complete the study. The financial limitations affect the participation of organisations that may involve travel costs for the researcher. Consequently the volume of cases included is affected by the availability of participating organisations based on distance. Fewer organisations may be included in the research if there is a need to travel to the organisations that are prepared to participate. Additional cases may be included if available local organisations are identified. Time constraints affecting the researcher also affect the number of cases included in the research. The time restrictions are especially relevant if travel is required. The availability of participating organisations local to the researcher enables more organisations to be included in the research. Organisations local to the researcher require less time to meet with and conduct interviews than if travel is required.

3.5.3 Interviewees

Having identified the unit of analysis as the IT department of Australian organisations and the number of cases necessary, it was determined that specific roles within the organisation were required as the interviewees. The appropriate participant in the interview can be crucial to the realisation of the required outcomes of the case study. Engaging the correct participants will result in obtaining the information required and access to the secondary data (Yin 2009). The selected roles within the organisation were identified for their importance to the ITIL implementation and IT services delivery. The roles identified included the Chief Information Officer, project managers, senior IT delivery leaders, ITIL Process Managers and technical support staff. The roles include a selection of leaders of the

organisation, managers of the change programs, ITIL process managers and support staff who were required to deliver the change and conform to the processes and delivery requirements.

3.5.4 Case Selection

The next step following the identification of the number of cases, the required interviewees and the unit of analysis is to select the cases. Consideration for the cases included two conditions. Sites should be selected that produce comparable outcomes or because opposing results are expected. The type, size, industry, location and ownership of the organisation were considered (Benbasat et al. 1987). Care was taken to select cases that could support the development of the theory (Eisenhardt 1989).

The primary selection criteria for the study were that the organisation had recently completed an ITIL implementation or was near the final stages of an ITIL implementation. A recent implementation could be considered as one that has been within the last few years and there are sufficient experts available to provide information regarding the implementation and organisational change. The participants in the case study were to be Australian organisations or Australian based organisations. The timeframe of the ITIL implementation is not specified. It is further identified that the participation of organisations is dependent upon factors including availability and geographic location. The willingness of the organisation to participate was a critical requirement.

On the basis therefore that cases were to be relevant to the research it was necessary that the organisations had implemented ITIL. Selection on that basis could not be random. A deliberate targeting of different types of organisations was undertaken such that comparable and contrasting results could be obtained. The intention was to include different organisations that had implemented ITIL so that differences could be considered.

3.5.5 Time Horizon

The time horizon for the research must be determined as part of the research design. The choices included cross sectional and longitudinal. The most likely choice for an

academic research project is cross-sectional as doctoral programs do not provide the time needed for a longitudinal study (Saunders et al. 2009). The cross sectional study provides a view at a specific point in time. It is common for case studies to be conducted as a cross-sectional study (Saunders et al. 2009) and the majority of business research for management purposes applies this approach (Zikmund et al. 2013). It was determined that a longitudinal approach was not feasible for this study. The longitudinal study requires the research to be conducted over a period of time (Saunders et al. 2009) requiring the participants to be interviewed on a number of occasions throughout the research. (Zikmund et al. 2013). The longitudinal approach could not be considered for a number of reasons. Participant organisations were distributed widely throughout Australia. It was not possible to visit the organisations on multiple occasions throughout the research. The duration of the doctoral research does not allow for the research to be conducted over an extended period of time to accommodate changes that occur throughout the ITIL implementation. For these reasons the longitudinal approach was not considered appropriate or suitable for the research. The cross sectional approach was considered appropriate and required a single visit to each organisation and could be completed within the duration of a doctoral research schedule.

3.5.6 Data Collection Techniques

This section will discuss the data collection and justify the selection. The case study research method provides a capability to use multiple sources of information. This method can include documentation or records, observation, interviews and material outputs (Benbasat et al. 1987).

The collection of empirical data was achieved by multiple methods including interviews, secondary data and questionnaires. This is a usual technique for case study research (Eisenhardt 1989). The following sections document the structure of the data collection. The in-depth interview is a method to gain information from subjects considered experts (Milena et al. 2008). Secondary data comprise emails, web sites, intra net sites, memos, reports, documents and internal surveys (Saunders et al. 2009). The in-depth interviews and identification of secondary data

were planned to gather the data necessary to answer the research questions. The interviews were recorded for conversion to transcripts for analysis.

3.5.7 In-Depth Interviews

The in-depth interviews were conducted as a one on one interview between the researcher and an expert representing the participating organisation (Zikmund et al. 2013). The in-depth interview is a technique that is intended to obtain from designated experts information required for the study. The interviewer is considered to be learning from the interviewee. During these interviews the subject should be provided with an environment in which they feel free to express themselves and their views openly (Milena et al. 2008). The in-depth interviews were conducted using a structured line of questions. A questionnaire, presented as an interview, is designed to determine facts (Berent 1966). Although the question may be answered the interviewer allows the participants to respond without interruption as the intention is to get the subjects talking (Berent 1966). The interviews could also be described as semi-structured. The semi-structured interview enables some flexibility to adjust questions according to the responses or needs of the interview and even the discussion (Saunders et al. 2009). The same series of questions are applied to each interview.

The use of in-depth interviews responding to set questions but also allowing subjects to provide additional information they wish to contribute was expected to provide the information necessary from participants. A set list of questions was an assurance that the required information could be obtained without affecting the additional information provided freely and supporting the research.

3.5.8 In-Depth Interview Design

The in-depth interviews were designed to capture the data to answer the research questions. The interviews were designed to consist of a single one hour interview for each organisation. The interview questions are provided in Appendix A1. The questions were structured in four major components.

3.5.8.1 Organisation

The first series of questions referred to the organisation itself and the nature of the ITSM before the ITIL implementation. This information presented a view of the organisation and the organisation's IT services and ITSM prior to the organisational change.

3.5.8.2 Success of the ITIL Implementation

The second series of questions included the success or failure of the implementation and the initiator of the ITIL implementation. A set of criteria for the success or failure of an ITIL implementation has not been identified in the review of literature. The research is dependent upon understanding if the ITIL implementation was successful or unsuccessful. Pollard and Cater-Steel (2009) described a series of benefits obtained from the implementation of ITIL. The benefits were adapted and applied to the questions as ten criteria for success. The benefits reported by Pollard and Cater-Steel (2009) are presented in Table 2-19. The responses by the interviewees were based upon their perceptions if actual measurable outcomes were not available. The responses provided were allocated a numerical score to depict the success of the ITIL implementation. The scores to be accorded were 0 for not successful, 1 for partially successful and 2 for successful. The answers that the success was not clear or that the criteria was not measured were not provided a score and the result left blank and excluded. The scores were tallied and averaged for each organisation. The results indicate success or failure of the ITIL implementation. The questions referring to the success of failure of the ITIL implementation are aligned with the Research Questions 2 and 3. These questions are dependent upon the identification of the success or failure of the ITIL implementation.

Questions were not included that were specific to a version of ITIL or a phase of ITIL. The phases or version of ITIL implemented were not required to answer the research questions. Additionally the researcher considered that specific questions may lead the interviewee to answers rather than to allow the interviewee to provide answers to open questions. The researcher also considered that the phase could be ascertained from the answers provided.

3.5.8.3 Organisational Change Strategy

The third series of questions gathers information about the organisational change strategies used for the ITIL implementation. The series of questions is in two parts. The first part of questions relates to the organisational change strategies the organisation used in the ITIL implementation. This series of questions is aligned to Research Question 1. The answers to the questions provided the information necessary to understand the organisational change strategies applied. The second part of the questions related to the STS approach to the organisational change. The questions are further separated into the four STS components of tool, process, organisational structure and people. This series of questions is aligned to the Research Questions 2, 3 and 4. Research Questions 2 and 4 relate specifically to an STS approach to organisational change and Research Question 3 relates to organisational change factors. The STS approach to organisational change is included as a requirement of Research Question 3.

3.5.8.4 Balance of the Leavitt Diamond and STS Relationships

The fourth series of questions align specifically to the Leavitt Diamond and Research Question 4. The questions sought to identify the activities undertaken to implement ITIL from an STS perspective. The questions were also intended to identify the relationships between the STS components and the requirements for the balance of the Leavitt Diamond. These questions would further develop the understanding of the STS approach adopted.

To identify the activities undertaken and relationships between the STS components a series of questions was asked specific to each STS component to identify the changes made, the activities undertaken and the difficulties encountered. The questions sought to identify the activities to implement each of the STS components and if interaction existed between the STS component requirements. The participants were provided with an explanation of the STS components to ensure that they provided responses based on a level of understanding of the STS model of change.

Following the identification of the activities undertaken and the difficulties encountered the participants were asked a ranking question. A ranking question asks

the interviewees to provide the response in an order by rank (Saunders et al. 2009). The interview requirement was to rank the STS components in order by the magnitude of effort applied in the ITIL implementation. The ranking of effort applied to the STS components was a necessary requirement of the research. The ranking was to identify which STS components in an ITIL implementation required the most effort through to the least effort. A ranking of 1 indicates the most effort and 4 as the least effort. The ranking of the effort applied to the STS components is used to determine an average ranking position. The use of non-parametric statistical techniques with the application of average rankings has been applied in Delphi studies (Schmidt 1997) and IT project success criteria (Karlsen et al. 2005). Average rankings have been applied by researchers referenced in this research, for example, Iden and Langeland (2010) and Lech (2013). Although the use of an average for ordinal data is considered to be not strictly correct, it is frequently applied by researchers (von der Gracht 2012).

The interviews commenced with an explanation of the ethical requirements of the interview. This fulfils the requirements of the ethics approval granted to the research and ensures that the interviewees understood and agree to the terms of the ethics considerations. The interview then progressed to an overview of the research being conducted. Subsequently the interview then proceeded following the pre-established series of questions. The in-depth interview provides an opportunity for the participants to discuss their views, how they feel and their knowledge (Milena et al. 2008). The participants were encouraged to make further comments beyond the scope of the question as it was considered that this may add valuable information.

3.5.9 Secondary Data

To support the research, secondary data was obtained where possible. Secondary data comprises emails, web sites, intranet sites, memos, reports and documents. Data collected in this way can assist in triangulating results from the other data sources. The information available for the research is dependent upon the access provided by the organisation (Saunders et al. 2009). Secondary data is a significant part of the data collection. The use of multiple sources of data is one of the benefits and key points of the case study approach. The multiple sources of data enable triangulation

of the data and consequently the validation of the evidence. The quality of case study research has been found to be higher when multiple sources of data are used (Yin 2009). The participants were requested during the interviews to provide internal documents or reports that support the research.

3.5.10 Pilot Case

The research approach consisted of a pilot case study before the main research. The pilot case study assists with the identification of improvements that may be required for the collection of the data and with the practices being to be followed in regards to the data collection (Yin 2009). The pilot study is an important step in ensuring that the questions are suitable and for preventing research with errors (Zikmund et al. 2013). A suitable candidate for the pilot study was identified as a private sector organisation that recently implemented ITIL. The selected organisation was suitable because it offered ease of access and geographically local to the researcher (Yin 2009). It was also suitable because the interviewee had expressed an agreement to participate in the pilot with the understanding that the data collection practice was yet to be finalised. The email approach to the pilot study participant is attached as Appendix 2.

The purpose of the pilot case study was to trial the approach of in-depth interviews supplemented by secondary data. An analysis of the interview protocol, data and the results identified refinements to the interview questions and topics.

The pilot case study identified that the number of questions formulated resulted in the interview extending beyond the scheduled one hour time duration. The analysis of the data identified that the questions did not adequately answer the requirements for determining the success of the ITIL implementations. On the basis of the pilot case study, adjustments were made to the questions for the remainder of the case studies. The changes included the removal of non-essential questions that did not contribute to the research. An extended set of criteria for determination of the success of the ITIL implementation was included in the questions. The organisation that participated in the pilot was later approached and asked the revised questions to establish the success of the ITIL implementation. The questions asked in the pilot study are attached as Appendix 3.

3.5.11   Validity and Reliability

This research uses the four criteria that are usually applied to positivist research to determine the consistency of qualitative research. The criteria include internal validity, construct validity, external validity and reliability (Gibbert et al. 2008). Validity is defined by as 'the accuracy of a measure or the extent to which a score truthfully represents a concept' (Zikmund et al. 2013, p. 303) and refers to the reduction of inaccuracies. It is important to ensure that the research results will be correct and consequently worthwhile (Davis 1996). Reliability refers to the ability to perform the research as a repeatable process such that the data collection can produce the same results (Yin 2009). The four criteria are examined in this section.

Internal Validity

Internal validity is described as 'the causal relationships between variables and results' (Gibbert et al. 2008, p. 1466). The requirement for the researcher is to ensure that the conclusions that are reached are supported by appropriate causes and logic. Three requirements have been determined to ensure that internal validity is acceptable. These include a clear research framework, pattern matching and theory triangulation. Care was taken that these requirements were met within the data analysis phase (Gibbert et al. 2008). The clear research framework requirement is achieved by displaying the relationships between variables and outcomes with supporting discussion. Pattern matching occurs within the cross case analysis. In this phase patterns are identified across multiple case studies. Matching patterns that agree support the internal validity (Yin 2009). The internal validity for this research was assessed by obtaining secondary evidence and comparing that evidence against the answers to the interview questions. In doing so the answers to the interview questions were found to be consistent with the data contained in the secondary evidence.

Construct Validity

Construct validity refers to the measures that have been applied to the concepts of the research. Criticism has been levelled at case studies when the researcher has not applied an appropriate measure. This may result in the outcomes being subjective (Yin 2009). Construct validity was considered as part of the data collection

component of the research project (Gibbert et al. 2008). Strategies to ensure the construct validity is appropriate includes the use of evidence from more than one source and ensuring that a chain of evidence has been established (Yin 2009). The validity test was met by applying a multiple case study approach using data collected from interviews and secondary data. As a consequence the data was collected from multiple organisations as well as from multiple sources. All evidence was maintained and aligned with the questions. A case study database was maintained containing data from the multiple sources applicable to the various organisations. The two strategies applied to this research of multiple sources of evidence and maintaining a chain of evidence supports the construct validity of a case study approach (Yin 2009).

External Validity

External validity refers to the area to which the study can be generalised (Yin 2009). The view has been held by critics of the case study approach that a single case study approach is not suitable for generalising (Yin 2009). This validity concern is overcome by selecting multiple organisations to participate in the case study. This ensures that as a multiple case study approach the findings from each case study can be replicated across other case studies. The case study organisations have been selected because they have all implemented ITIL. Within the multiple cases similarities exist as do differences. Replication across multiple case studies provides evidence supporting the proposed theories (Yin 2009). The use of in-depth interviews enabled the clarification of answers and the querying of responses to ensure that the research would obtain the information necessary to support the requirements of the research. The in-depth interview approach provides for a high degree of validity (Saunders et al. 2009).

Reliability

The intention of the reliability test is that the same results would be achieved should the research be repeated by another researcher at a different time. This refers to the same case being repeated and not different cases being researched (Yin 2009). The reliability test is achieved by documenting in detail the case studies undertaken and the steps taken in the research. A case study database consisting of the material

from each case study of this research is maintained. The case study database supports the replication of the case study. Gathering and organising the various documents and descriptions associated with the case study enables their use again by subsequent researchers (Gibbert et al. 2008).

3.5.12 Ethical considerations

The multiple case studies are all conducted with consideration for ethical requirements. In accordance with the requirements of ethical considerations participants in research have rights and commitments were made to the participants. Participants in research expect that other participants treat each other ethically. This expectation extends to the asking of questions, the answering of questions and to the presentation of the results (Zikmund et al. 2013). This research was conducted in alignment with the expectations of the participants that the ethical requirements apply to the researcher's conduct and rights of the participants. Ethics applies to the design of the research and the manner in which the data is collected, analysed and presented (Saunders et al. 2009).

The research conducted conformed to ethical standards in a number of ways. The research was conducted in accordance with the approval granted by the University of Southern Queensland Human Research Ethics Committee. The ethics approval was granted on the basis of an application in which the research nature and data collection strategies were provided. Progress reports were necessary to ensure that the approved commitments are met in a continuing basis throughout the research. The approval number of #H12REA176 was granted in October 2012. The ethics approval granted by the Human Research Ethics Committee of the University of Southern Queensland is attached as Appendix 4.

Prior to each interview the participants were provided with an Interview Participation Information Sheet. This document provided clear information regarding the research being undertaken and information about the researcher and research supervisors. The participation in the project and the procedures for the interview were explained to the interviewee. This was also outlined on the information sheet. A sample of the information sheet provided to each participant is attached as Appendix 5. The interviewee was provided with information regarding the voluntary nature of

their participation and their right to withdraw. Each participant was asked to sign a consent form that confirmed their awareness of the nature of the research and their role in it. The confidentiality obligation of their information was provided and that the interview would be recorded and the recording stored in a secure location. The consent form provided to each participant is attached as Appendix 6.

Seven participants signed the consent form prior to the interview. One participant provided a written response to the interview questions before providing the signed consent form. The response was not used until the signed consent form had been provided.

3.6 Data Collection Process

The case studies were conducted following the research design, the identification of the selection requirements and the pilot study. The organisations that were identified as possible participants in the research were widely geographically distributed. As a consequence of the distances between organisations it was a requirement that travel occur so that interviews could be conducted in person. Coordination of the data collection activities was essential in order to maintain low costs and reduce travel.

3.6.1 Contacting Organisations

The following methods were undertaken to contact the organisations and arrange the interviews and data collection. A number of different methods were used to identify individuals and organisations that were considered may provide suitable information and support for the research.

The President of the itSMF Australian chapter agreed to provide access to the organisation's nationwide resources to assist with identifying research candidates. The agreement is displayed as Appendix 7. In association with the itSMF, four organisations were identified, contacted and participated in the research. The first organisation to be identified by the itSMF was used for the pilot study. A local itSMF committee member identified the organisation as having recently implemented ITIL. Three organisations were identified by the itSMF through their participation and the researcher's attendance at the itSMF national conference of

2013 that was held in Canberra. The three participants were representing their organisation at the conference and their ITIL implementation program was known to the itSMF. An email provided to one of the organisations is displayed as Appendix 8.

Seven local organisations were contacted directly by mail to enquire if they had implemented ITIL. A copy of the letter is attached as Appendix 9. The organisations were not known to the researcher. The organisations consisted of various types and sizes. One organisation only responded to the mail enquiry with acknowledgement that the organisation had implemented ITIL recently and would participate in the research. The other organisations did not respond.

Three more organisations were identified by colleagues of the researcher. Each of the organisations was contacted by email and responded that they had recently implemented ITIL. A copy of an email is attached as Appendix 10. The three organisations all agreed to participate in the research.

Seven of the eight organisations that agreed to participate in the research were initially contacted by email. The eighth organisation was initially contacted by letter. The recipient of the letter was one of seven organisations contacted in this manner. Each initial contact, either by letter or email, introduced the researcher, the research project and the approach to the collection of data. The letters and emails included information about the requirement to conform to the human ethics agreement and in particular the confidentiality and anonymity associated with the research. The letters and email included a return email address.

Upon receipt of a response indicating interest in the research the participants were again contacted. Typically the next contact was again by email. This email responded to the return comments from the participants and commenced discussions in regards to the arrangements for the interview. This included scheduling and location. Information was provided such that an agreement to participate was requested and the opportunity for questions regarding the research was offered. When an agreement to participate was returned, the subsequent correspondence included arrangements for scheduling and the location of the interviews.

The pilot study was conducted in a local environment in Adelaide at the participant's work place. This was convenient for both parties and the arrangement was easily

coordinated. The following two interviews were conducted in Canberra. The participants were in Canberra for the itSMFA National Conference. The normal work location of the participants was Melbourne and Sydney. To reduce travel time and costs the interviews were conducted in Canberra. The email arrangements progressed until the arrangements were finalised. One interview was then conducted at the location of the Conference and the other at a hotel in Canberra. A third person contacted at the itSMFA National Conference in Canberra agreed to the participation in the research but a time could not be agreed to due to conflicts in schedules. Existing commitments prevented the participant from finalising a scheduled time and location. Contact for parts of this discussion was in person. At the conclusion of the itSMFA conference the participant returned to Brisbane. Subsequent correspondence resulted in fulfilling the agreement to support the research although an interview was not conducted. However, the participant provided written responses to the interview questions.

The fifth participant responded by email to a letter. This was the only response to a number of letters distributed to Adelaide based organisations. The interview was scheduled and a location agreed. The interview was conducted at the participant's work place.

The sixth, seventh and eighth organisations that participated were located in Darwin. Email correspondence was established and interviews were arranged with schedules and locations. The interviews required travel from Adelaide by the researcher. The interviews were all scheduled for the same day and were conducted at the work place of the participants.

3.6.2 Conducting Interviews

At the time of contact and arrangements for the interviews the participants were provided with an overview of the research and were explained the ethics requirements. The participants were provided with an Interview Participant Information Sheet. This document was printed on the University of Southern Queensland letterhead and included the HREC Approval Number, research project title and the names of the researcher and research supervisors. The information sheet

explained that the interviews would be digitally recorded. The pilot case study was included as one of the eight cases.

The pilot case study extended for approximately ninety minutes. Six of the participants were interviewed for periods of approximately one hour each. One participant responded to the questions with written answers. The participants were requested to provide copies of relevant documents as secondary data.

3.6.3 Post Interview Procedures

At the conclusion of the interviews all interviewees were provided with a gift of a University of Southern Queensland writing compendium. An email thanking them for their participation was provided. An email note of gratitude sent to one of the participants is displayed as Appendix 11.

3.6.4 Case Study database

Case studies research should develop a database that contains evidence gathered. This enables the evidence to be available to be presented to other researchers if required rather than producing a report only. The practice of the case study database increases the reliability of the case study (Yin 2009). The case study database created for this research is comprised of the secondary data, the audio recordings of the interviews, the transcripts of the interview records, correspondence with the participants and others that supported the research and other notes and records required throughout the project. The contents of the case study database were used in the data analysis. A physical folder for each case study is maintained. The folder contains hard copies of all material collected including transcripts, secondary data and signed ethics approval documents. The folders are maintained on a personal computer containing electronic versions of the same material.

3.7 Data Analysis

A significant amount of data was collected for the research. The data collected was prepared for analysis and subsequently analysed. This section describes the methods undertaken for the preparation of the data and how the data was analysed. The data

analysis entails the scrutinising, classifying and arranging of the evidence to enable findings to be drawn (Yin 2009).

A method commonly used for the analysis of the qualitative data was applied. Throughout the process of analysis data were scrutinised for patterns related to categories. Patterns become more organised over time as they emerge (Nicholls 2009). The data analysis was conducted as within case and cross case analysis. The within case analysis is important because of the amount of data that is collected. The cross case analysis involves the identification of patterns (Eisenhardt 1989).

3.7.1 Data Preparation

An initial procedure to prepare the data was followed in which the data was summarised, categorised and structured. The first step of summarising the data involved creating transcripts of the audio-recorded interviews. As advised by Saunders et al. (2009) interviews were transcribed, checked for validity and corrected. The transcriptions did not include the correction of grammar but ensured that the interview was transcribed accurately. The files were saved as separate files with naming conventions that provided the required confidentiality. The audio recordings were transcribed by a trained professional. The transcriptions were then checked against the audio recording by the researcher and the content validated.

The intention of the researcher was that the interview participants would validate the transcribed interview. Difficulty was encountered in obtaining validation. Transcripts were sent for content confirmation to four only of the interview participants. One participant provided written responses to the questions and there was therefore no need for validation. Three of the participants had changed employers according to their LinkedIn profiles and were not contacted for transcript verification. New email addresses were not known and as the participants were no longer employed by the organisation that had agreed to participate it was considered inappropriate to pursue. Of the four that were contacted with the interview transcription for validation two did not reply, one had the email account closed and one responded with acceptance of the transcription as accurate.

Secondary data were analysed, noted and compared against interview summaries for validation. The data once summarised was categorised according to the theoretical framework, research objectives and research questions. This process provided structure to the material for further analysis (Saunders et al. 2009).

The data collected was sorted into three categories. The categories included information about the organisation, the ITIL project and organisational change. The organisational change strategy category was sub-categorised into organisational change and STS change strategies. Microsoft Excel spreadsheets and the qualitative research software package NVivo were used to organise and analyse the data obtained.

3.7.2 Within-Case Analysis

The within case analysis provides a detailed description of each case study. This analysis assists management of the significant amount of data that is collected. The within case analysis is important for developing awareness although an established structure is not applied. The within case analysis enables the researcher to become acutely acquainted with each case (Eisenhardt 1989).

Each case study was documented according to categories and sub categories. The primary categories included the status of the organisation's ITSM before the implementation of ITIL, the drivers of the ITIL implementation, the success of the ITIL implementation, the ITIL project and the organisational change strategies applied. Key components of the sub categories included the changes applied in the ITIL implementation to the four STS components of the organisation and the STS approach to organisational change that was undertaken.

3.7.3 Cross Case Analysis

The cross case analysis is applied in the search for patterns by viewing the data in a number of different ways. This includes a review of a single category but across multiple case studies. The cross case analysis focused on the research problem and reviews the cases as a comparison. The comparison identifies factors that are the same or similar as well as those that are different. Reviewing the data as a cross case

analysis with a structured approach increases the possibility of identifying findings and adds to the reliability of the theory (Eisenhardt 1989).

The cross-case analysis is presented in the same structure as the within case analysis. Each category and sub category as documented in the within case analysis is similarly documented but displaying the data for each case study. Descriptions are made of the key points identified. The key points include the differences and similarities of the data across the case studies.

3.8 Chapter Summary

This chapter described the approach to the research and provided the research design. The chapter justified the positivist epistemological multiple case study approach to collect the data to answer the research questions. The research strategy was discussed and the case study design explained. The content and design of the in-depth interviews were provided, including an alignment with the answering of the research questions. The approach to the collection and analysis of the data was also included. Chapter 4 presents the results of the analysis of the data.

4 Data Analysis

4.1 Introduction

Chapter 3 described the research methodology to collect the case study data to answer the research questions. The chapter described the design of the case study approach including the number of cases and the method of selection. The data collection techniques of the in-depth interviews and secondary data were also discussed. Chapter 3 also outlined how the collected data was prepared for analysis.

Chapter 4 provides an analysis of the case study data collected. The chapter consists of ten primary sections. The initial sections of §4.3 and §4.4 provide an overview of the organisations and the method applied to analyse the data. §4.5 includes the specific items of service desk and tool support that are consistent across all organisations. §4.6 to §4.13 include the analysis for each of the eight participating organisations. Each section, or case, is structured in the same way. The sections are further structured into sub-sections that include an overview of the case, the status of the ITSM before the ITIL implementation, the drivers of change and the success of the ITIL implementation. The following two sub-sections examine the ITIL implementation and the organisational change. §4.14 presents the cross case analysis in which the data from each case is compared to other cases.

4.2 Analysis of Data

The in-depth interviews resulted in a significant volume of data requiring management and analysis. To organise and manage the data the qualitative data analysis software QSR NVivo 10 and MS Word tables were used. The interviews were conducted according to a prepared set of questions however the participants at times provided information in answering a question that was pertinent to other questions. The researcher allowed the interviewees to progress lines of thought with awareness that responses to some questions contained answers to other questions. The use of NVivo enabled the collation of the answers to questions regardless of the point in the interview the question was answered or referred to.

The interview transcriptions were imported into NVivo. Primary nodes were created for each of the main sections of the interviews. This included organisational overview, ITIL project success, ITIL project implementation, organisational change strategy, tools, process, people, organisational structure and Leavitt balance. Secondary nodes were created for each question or, where appropriate, a set of questions. It was appropriate for some sections of the interview to keep questions together in the one node. The transcriptions were coded and the selected text placed into the appropriate node.

The use of NVivo coding enabled the collation of answers into the appropriate nodes regardless of the point in the interview in which the answer was provided or if an answer was provided as part of another question. NVivo provided the view across all eight organisations for each question or set of questions enabling a comparison of responses to occur. The data in the nodes was manually extracted for entry into MS Word tables for further comparison and analysis. The use of MS Word at this point provided greater flexibility by enabling the researcher to continue with the analysis when not accessing the personal computer on which NVivo was installed.

The MS Word tables created from the coded data contained information for each organisation according to a question or set of questions. The individual organisation information was further collated into tables containing the information from each organisation which was then applied to the cross-case analysis. The use of MS Word tables containing the information from each of the organisations enabled a comparison across each of the organisations and was used to identify patterns of similarities and differences.

This chapter contains the results of the analysis of the data as described commencing with the interview transcriptions, the application of NVivo to collate data into like sets and the further use of MS Word tables to present the organisation's information in a useable form enabling the cross case analysis.

4.3 Organisation Information

Eight organisations participated in this research. Due to the requirements for ethical considerations of confidentiality the names of the participating organisations and

individuals are not provided. The organisations are referred to as Case A to Case H. Quotations from interviews are referenced by the organisation and line numbers in the transcribed interview documents, for example, C1: 123 refers to line 123 from the organisation C interview. An overview of the organisations is displayed in Table 4-1. The table displays core information regarding the organisation, the industry it belongs to, the size of the IT environment and when the interviews were conducted. The research participants represented a variety of public, private and educational organisations.

Table 4-1 Organisations Participating in the Case Study Research

Case Study	Description		Interview Dates
	Distribution	Industry	
A	National	Energy	28/12/2012
B	Global	Chemical	8/8/2013
C	Global	Financial	8/8/2013
D	State	Public Service	21/8/2013
E	Local	Tertiary Education	10/10/2013
F	State	Public Service	14/11/2013
G	Local	Tertiary Education	15/11/2013
H	State	Public Service	15/11/2013

4.4 Overview of Case Analysis Method

This section provides an overview of the method undertaken to analyse the case study material. The semi-structured interview data and the secondary data were analysed to identify the organisational change strategies applied by the organisations when implementing ITIL. The data collected from the semi-structured interviews provided an information rich understanding of the organisations, the ITIL implementation project and the organisational change strategies applied.

The status of ITSM before the ITIL implementation

An understanding of the status of the ITSM delivery that existed before the ITIL implementation project was developed from the semi-structured interviews. The

interviews included questions specifically for this purpose. The existing ITSM delivery is presented for each organisation and in the cross-case analysis.

The drivers of the change

The semi-structured interviews included questions to identify why organisations implemented ITIL or the drivers that existed resulting in the organisation implementing ITIL. For each organisation the drivers for change are identified and then compared in the cross case analysis.

The success of the ITIL implementation

A series of specific questions to determine the success of the ITIL implementation was asked in the semi-structured interviews. The research is conducted to identify the organisational change factors that influence the success of ITIL implementations. It is therefore necessary to understand if the ITIL implementation for each organisation has been successful. The nature of the questions asked for this section is that they require primarily yes or no answers but with some limited opportunity for expansion on those answers, where necessary.

The ITIL Implementation Project

The semi-structured interview data were analysed to determine the scope and size of the ITIL implementation. The analysis extended to the four STS components and included issues encountered and how they were overcome. The data collected included the processes implemented, the technology changes, the organisational structure changes and the people components including skills and training.

Organisational Change

The organisational change strategy and implementation method that the organisations applied to the ITIL implementations was central to the requirements of the research study. The semi-structured interview data were analysed to identify the model of organisational change applied and the approach to and type of the organisational change. Included in the section is an analysis of the STS approach to the organisational change. The organisational change strategies and approaches are compared and related in the cross case analysis.

4.5 Notes for Consideration

The following points are consistent for all organisations and are not included specifically in the analysis for each case.

4.5.1 Service Desk

Each organisation implemented or maintained a capability to receive calls or notifications of service disruptions. The ITIL Service Desk function was not specifically explored within the data collection other than developing the understanding that the organisations had the capability to capture Incidents and be advised of service disruptions by IT users within the organisation. The services provided by the Service Desks were not within the scope of the research.

4.5.2 Technical Support for Tools

The organisations did not include within their ITSM services the technical support for the tools that are used for recording Incidents, Changes, Problems, Configuration Items (CIs) and other process transactions. The case study analysis in this chapter will discuss the tools that each organisation either introduced or existed previously and continued to use. This research did not identify that an IT technical team maintaining technology that supports the ITIL processes is directly contributing to the organisation's ITIL based ITSM. None of the organisations referred to ongoing tool support as a component of their ITIL implementation. Activities, roles and training required to support the technology are considered to be not included within the delivery of ITSM but considered to be a delivery of technical services.

4.6 Case A

4.6.1 Organisational Overview

Case A is a national energy organisation that employs approximately 100 ICT staff. The company maintains between 1500 and 2000 personal computers. The proposer of and Program Leader for the ITIL implementation was interviewed for Case A.

4.6.2 Pre-implementation ITSM

The IT organisation was comprised of approximately eight operational capability areas. Each area had developed its own methods of servicing end users depending upon the type of expertise that the team delivered. As a consequence of the natural attrition of staff the service delivery methods would change based upon the views of the staff that were in the team at the time. ITSM was very informal and ad-hoc. Incidents and service desk calls were recorded in a tool named Infra. The primary user of the tool and the Incident records was the service desk staff. Few Incidents were referred beyond the service desk and consequently the ability to do so was minimal. Configuration Items were recorded in a MS Access database that was not related to Infra. Initially CI data were captured effectively but it became out of date quite quickly. The movement of CIs was not reflected with changes in the CMDB. This was especially the situation for desktops but less so for servers. Table 4-2 summarises the ITSM delivery that existed before the implementation of ITIL

Table 4-2 Case Study A ITSM Status Before ITIL Implementation Summary

ITSM delivery	Informal
Process and Function	Service Desk
	Some Incident & Configuration Management
Tool	Infra
	Access databases

4.6.3 Drivers of Change

In response to a direct question regarding problems with the existing processes the answer was that there were problems that were significant and there were inefficiencies in the existing service. A proposal for support for the SAP environment identified that there had been an increase in SAP related support activity but that Incident records did not contain sufficient data, bottlenecks existed with the ownership of Incidents, escalation paths were unclear, resources did not take ownership of Incidents and that records were not well maintained. The assignment of Incidents between the first and second level of support was not effective and the Service Desk staff were expected to resolve more Incidents than they currently did. The company had undergone a major increase in demand for ICT services and it was

identified that there was a need to strengthen and mature the processes for call handling and responding to service calls. As previously stated process records were not maintained in a central repository.

The ITIL implementation program was initiated by the Senior Manager of IT. There was a need to present the benefits of the ITIL implementation in terms of business outcomes to ensure support. Funding was not provided for the program but there was support in terms of the objectives to be achieved. The interviewee advised that 'there was support in terms of overseeing the objectives, the outcomes, not funding, which was always the constraint that we suffered with trying to get resources' (A: 175-177). Table 4-3 summarises the drivers of the ITIL implementation change.

Table 4-3 Case Study A Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
Not a central repository for ITIL processes	Initially no	Senior Manager of IT
Inefficient management of Incidents and calls	Support for outcomes but not for funding	
Requirements of ITSM support for SAP not met		

4.6.4 ITIL Implementation Success

The ITIL implementation program was considered to be successful although it did not meet the initial expectations. It had been determined that the original expectations had been set too high. Table 4-4 displays the results of the ITIL implementation success questions.

Table 4-4 Case Study A ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	No	Expectations were set too high
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Unclear	The measure for this is unknown
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Partial	There was improvement
Enhanced productivity?	Yes	
Reduced costs?	Not measured	This was not measured
Improved customer satisfaction?	Partial	Many areas of service management measured. Success was varied across measures.

4.6.5 The ITIL Project

4.6.5.1 Overview

The ITIL implementation project was initiated by the Senior Manager of IT. The consideration for an ITIL implementation commenced following an ISO 9001 audit and the recommendation that the company should consider ISO/IEC 20000 certification. To attract funding and support from senior management the ITIL implementation was proposed as a strategy to align the business requirements with the IT delivery. This proposal was presented as such to facilitate corporate support in an environment where funding is normally provided only for core services. Funding was approved and external consultants were engaged to determine a baseline

assessment of the existing delivery. The ITIL implementation project commenced in late 2007 and continued to completion in twelve months.

4.6.5.2 Tool

The ITIL implementation did not require a new tool. The decision was made to use an existing tool as part of a program to rationalise surplus software. To that point there had been multiple tools performing multiple functions. The decision was taken to maintain a single toolset and incorporate the various processes into it. The tool that was retained was called Infra. A common complaint about the use of multiple tools was that there was a lack of visibility of workload and issues with ticket exchange between service provider teams. The change plan established functionality under the one tool: service catalogues, knowledge management, a CMDB and change and release management. Incident management had already been using the Infra tool.

Issues

Despite not implementing a new tool difficulties were still encountered. The staff using the tools that were not retained were reluctant to move to Infra. There was also a need to adjust licenses to accommodate the additional staff now using Infra.

4.6.5.3 Process

The initial focus of the ITIL implementation was Change, Incident and Problem Management. The determination of the processes with the highest priority was a business decision. The company believed that the three selected processes warranted a higher priority due to the demands of production support detracting from project work. The need was to improve resolution and fixed on first contact times and to reduce call wait times. These were considered to be quick wins. New processes that were provided with a lower focus included Knowledge Management, Service Level Management, Configuration Management, Continual Service Improvement and Availability Management. A Service Desk function had already been implemented. The intention was to align the processes to the ITIL guidelines.

Issues

The primary difficulty encountered with the implementation and improvements to processes was the resistance by the staff. The team members were following well established work practices and there was a reluctance to change. The difficulties were overcome by ensuring effective communication that the program had senior management support committed to the outcomes and by emphasising that improvements would benefit the customers.

4.6.5.4 Organisational Structure

The ITIL implementation did not include the addition or creation of new positions for new roles. Funding for new positions was not available. Consequently, the roles were incorporated into existing positions. This resulted in certain people having to perform their normal role as well as a new role as a process owner. The interviewee responded in regards to creating roles by advising that 'When I said we defined process owners, on creating process owner roles positions in this organisation, we defined roles as a function of an existing role that existed. Because we didn't have again funding to create new positions' (A: 587-589). The ITIL process roles were therefore essentially part time roles. Role descriptions were defined and there was an expectation that in the future actual positions would be created for the roles.

Issues

Many of the people designated with roles had not worked in an organisation that delivered IT Service Management based on the ITIL framework. Consequently these staff had limited understanding of how the processes would be delivered. Many staff had been trained to an ITIL foundation level and process owners were required to participate in ITIL practitioner training. The company did not have a network of experienced experts or practitioners in ITIL delivery. The lack of visibility and experience was a difficulty to overcome. The training to a practitioner level was an effort to address this issue. The delivery had become inconsistent as each capability or delivery stream had its own process owner. There was no single process owner managing a process in a consistent manner. It was considered that actual process owner roles would have been the ideal outcome.

4.6.5.5 People

Training

Significant training programs were established for the staff. Everyone in the ICT organisation underwent training. Most of the staff received ITIL Foundation level training. In addition, an in house ITIL training package was created and delivered to those who did not undertake the Foundation training. A refresher course was created and delivered several months into the implementation. The training developed in-house was focused on the delivery of ITIL in the company rather than being focused on theory. The training was tailored to meet the specific needs of the business.

Issues

The implementation of the ITIL processes had a significant impact on staff. In many cases the new processes required more work to be performed. In response to the question regarding the impact to the employees of the new processes the researcher was advised that the employees: '…hated it. A lot of processes we put in meant more work for them. In our interim models in meant double handling tickets and logging them in parallel systems until we achieved end state' (A: 638-640). The discontent resulted in resistance to the change. The resistance was considered to be overcome by emphasis to the staff that once the implementation was complete there would be an improvement in the handling of tickets, including transfer to other teams, which would be of benefit to them. However, the new processes were still expected to result in additional workload. The key activity to overcome the employee concerns was to identify to them that in feedback to leaders they had actually stated a desire for improvement and that this is the improvement they had requested. An emphasis was placed upon informing the staff that their work would be better than it had been.

4.6.5.6 ITIL Implementation Summary

Table 4-5 summarises the duration and scope of the ITIL implementation project.

Table 4-5 Case Study A ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	Late 2007
	End	Late 2008
Tool	Existing	✓
	New	
	Purchased	
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	✓
	Service Level Management	✓
	Problem Management	✓
	Knowledge Management	✓
	Request Fulfilment	
	Service Catalogue Management	
	Release Management	
	Continual Service Improvement	✓
	Availability Management	✓
Organisation Structure	New Roles	✓
	New Positions	
	Adjustments	
People	ITIL Training	✓
	Tool Training	

4.6.5.7 ITIL Implementation Issues Summary

The primary issue affecting the implementation was related to the staff. This included their resistance to the use of the tool and the new processes adopted. The staff also had a lack of existing skills to perform the new roles. Consequently, there was a focus on people issues resolved by training and communication about the benefits of the new delivery. Table 4-6 lists the issues identified and actions taken to resolve the issues.

Table 4-6 Case Study A ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	Licensing restrictions	Resistance by IT staff	Lack of experience in roles	Additional work for staff
	Resistance by IT staff	IT staff set in ways of working	Multiple process owners for each process	
Action to overcome	Licences obtained	Display senior management commitment	Training of staff in new roles	Emphasising benefits to come once implemented
		Focus on client benefits		

4.6.6 Organisational Change

4.6.6.1 Organisational Change Strategy

The ITIL implementation was independent of other change strategies in the organisation at the time. The organisational change strategy promoted by John Kotter Kotter (1996) was referred to in regards to parts of the ITIL implementation. However, the Kotter organisational change strategy was used as a tool only for communication with senior management. Rather than deploy it as a strategy for achieving the change it was used to obtain the support of the senior leaders in communications and presentations. The interviewee acknowledged that a number of different organisational change strategies were drawn upon but did not name them other than Kotter. The interview conducted at Case A was the pilot interview in which questions were asked of each of the eight Kotter stages. In retrospect, this did not demonstrate that a Kotter organisational change model was applied. In response to each of the questions the interviewee was able to identify points demonstrating actions conformant with the strategy. This contradicted the response that Kotter was referred to only as a communication aid in representing change to leaders. Further evidence of Kotter as an organisational change model that had been applied to the implementation was not evident.

It became evident that this was not an overall organisational change strategy being managed but an identification of separate activities that relate to the eight Kotter

stages. For example, when asked about the anchoring of new approaches in culture, Kotter's eighth stage, the response was that the implementation aligned with an existing organisational wide culture change program. There was no knowledge of this program prior to the commencement of the ITIL implementation. An organisational change strategy for the ITIL implementation meeting Kotter's strategy requirements had not been planned. Secondary material provided consisted of presentations to leaders, implementation plans and proposals and did not refer to Kotter or an organisational change strategy.

The Role of Staff in the Organisational Change Strategies

Throughout the ITIL implementation program the staff were provided with surveys and opportunities to provide feedback. The intention was to obtain support from the staff for the changes to be applied. The specific role of the staff in the ITIL implementation or organisational change strategies was not stated in the interview or in the secondary data. There is no indication that the staff had input to the organisational change strategies beyond providing feedback on the changes being implemented.

Reactive / Proactive Change

The ITIL implementation could be described as proactive change. There was a recognised need to change to meet the growing and future needs of the business. However there was not a specific event or circumstance that drove the need for change. The opportunity existed to plan for the change.

Implementation Type and Approach

The information provided in the interviews and the secondary data indicates that the project could be described as a punctuated equilibrium type of change. It is assumed that minor change of an incremental nature was likely to occur prior to the implementation of ITIL. The implementation of ITIL was a significant change undertaken for twelve months. There was reluctance for change in IT as evidenced by the difficulty in obtaining funding for the ITIL program.

The ITIL implementation was conducted with a phased approach although the phase period was short. The program commenced in late 2007 with a twelve month

schedule for completion. The phases were scheduled in a four week period from the commencement of the fourth quarter of the one year schedule. The secondary data includes a project plan identifying the pilot stage implementation of Incident Management to commence in the week of the 6th of October. Change Management commenced two weeks later and Problem Management a further two weeks later.

The implementation of ITIL could be considered as revolutionary change. The changes applied to the way in which IT services were managed required a complete change for the company. Although new positions were not created and the tool was retained, new roles were required and the tool was amended. Significantly, there was a new requirement to conform to the new processes and therefore the way of working.

Organisational Change Approach

The company implemented ITIL with a Planned Change approach. At the commencement of the program the organisation's ITSM delivery approach included only a Service Desk with some Incident and Configuration Management. The company deliberately established a program that would change the way IT services were delivered to a new way of delivering IT services. The new ITSM delivery included additional processes and re-skilled staff. The progression of the program moved the company from the previous state to the new state and consequently the amended ITIL delivery. The project was proposed by leaders and supported by management. Planned change is leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and the approaches undertaken is summarised in Table 4-7.

Table 4-7 Case Study A Organisational Change Type and Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big Bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

4.6.6.2 An STS Approach

Initially when asked to identify the relative effort applied to the four phases of the Leavitt Diamond the response was that this was a difficult question to answer. When asked to rank the effort in order of magnitude the response was provided as displayed in Table 4-8. The order of magnitude of effort represents the ranking for the effort provided to the implementation of the STS component. A ranking of one represents the component for which the most effort was provided and a ranking of four the component for which the least effort was provided. It should be noted that a tool was not implemented as part of the ITIL implementation and additional positions affecting the organisational structure were not funded and were not created. The ITIL implementation focused on the people and process components which are represented by the rank of magnitude of the effort identified.

Table 4-8 Case Study A STS Component Effort Ranking

Leavitt Diamond	Rank of Magnitude of Effort
People	1
Process	2
Tool	3
Organisational structure	4

The relationship between the STS components is displayed in Table 4-9. The people component was provided with the most effort. This included the development of new skills with ITIL training. Implementing the new processes was provided with the second greatest effort. The implementation of processes included eight new or improved processes. New roles were required however new positions were not created. Fulfilling the implementation of the organisation structure changes required the third magnitude of effort. The least effort was provided to tools. New tools were not required for the ITIL implementation.

Table 4-9 Case Study A Relationship between STS Components

Process	# Processes Implemented	8
	Rank of Magnitude of Effort	2
Technology	Existing	✓
	New	
	Purchased	
	In-house	
	Rank of Magnitude of Effort	3
Organisational Structure	New Roles	✓
	New Positions	
	Adjustments	
	Rank of Magnitude of Effort	4
People	ITIL Training	✓
	Tool Training	
	Rank of Magnitude of Effort	1

The impact on the STS components of the Leavitt Diamond resulting from the implementation of ITIL is displayed in Figure 4-1. The ITIL implementation for Case A consisted of new processes but retained the use of an existing tool. The tool still required adjustments to meet the requirements of the new processes. There was a need to ensure that the processes and tool are aligned. The new processes that were implemented required that the teams delivering IT services received training in the processes. Due to the existing familiarity with the tool, training in its use was not required. New roles were created and it was necessary to provide training to enable the delivery and the management of the ITIL processes.

The STS components of the company as displayed in the Leavitt Diamond were provided with focus according to the needs of the implementation. Additional effort was provided to the components that were affected the most, specifically the processes and the people components.
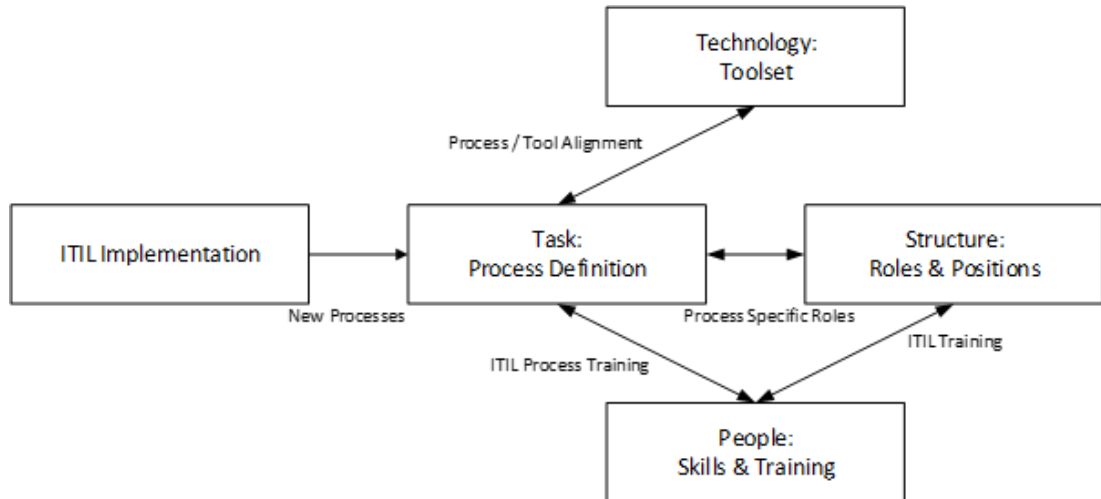
**Figure 4-1 Case Study A Relationship Between STS Components
in an ITIL Implementation**

Case A did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the company did address the STS requirements of an organisation as depicted in the Leavitt Diamond. Focus was provided to both technical and social components of the changes made. There was recognition that the process changes resulting from the ITIL implementation would affect the other components and as a consequence attention was paid to the other components. The implementation of new processes is a change to the technical component of the organisation. Additional changes were required to the technology component. Subsequently the new roles created and the training provided is evidence that there was recognition of the need for changes to the social components of the organisation. The adjustments occurred to the technology, the structure and the people components as necessary. Although Case A did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as necessary, to the four STS components. It could be considered therefore that Casen A did implement ITIL with an STS approach.

4.7 Case B

4.7.1 Organisational Overview

Case B is a global materials company that employs approximately 15,000 staff utilising approximately 10,000 PCs. The proposer of the program, head of Service Management delivery, was interviewed for Case Study B.

4.7.2 Pre-implementation ITSM

The company consisted of seven business units distributed globally with the consequence that that there was a great deal of IT duplication. The IT delivery centres servicing each business unit had established their own standards and delivery. The company in Australia and New Zealand had implemented Incident Management and some aspects of Change Management. Request Fulfilment had been implemented for the purpose of ordering software or PCs. The tool Remedy had been implemented in Australia and New Zealand and was used to record Incidents, Changes and Requests. The parts of the company that were not located in Australia were able to use the process and tools if they wished. However they did not use the process and tools and effectively had no defined processes and no ITSM delivery. Other tools had been deployed in other parts of the world but they generally suffered from poor performance and poor governance and were consequently not used. Table 4-10 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-10 Case Study B ITSM Status Before ITIL Implementation

ITSM delivery	Inconsistent
	Varied globally
	Some in Australia and New Zealand
	Available but not applied elsewhere in the world
Process and Function	Australia and New Zealand - Incident & Change Mgt
	Request Fulfilment for ordering PCs
Tool	Australia and New Zealand – Remedy
	Various tools in other regions

4.7.3 Drivers of Change

Case B experienced multiple issues with the existing processes and systems. As stated earlier, the company is a global organisation and a consistency of delivery was not in place. Staff in Australia and New Zealand were delivering some ITSM but other regions were not. ITSM was available to other regions but this was only if they chose to use it. Data and processes were virtually non-existent. The intention was to enable the delivery of added value in regards to IT. The company sought to establish a global IT environment and standardise processes to achieve a consistent delivery and increase efficiencies. The reliance on IT had been growing and there was a perceived requirement to align with business requirements.

The ITIL implementation was initiated by the Global Chief Information Officer. Support was provided by the Chief Information Officers of the various business units and the organisation generally. This was seen as critical to success. Table 4-11 summarises the drivers of the ITIL implementation change.

Table 4-11 Case Study B Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
Multiple tools and multiple different processes depending upon global region	Yes	The Chief Information Officer
No consistent delivery globally		
Not aligned with business needs		

4.7.4 ITIL Implementation Success

The ITIL implementation program was considered to be successful and was further described as exceeding expectations. Table 4-12 displays the results of the ITIL implementation success questions.

Table 4-12 Case Study B ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Yes	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Unclear	Successful for production systems Unsuccessful for non-production systems
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Unclear	There was no baseline taken at the commencement
Improved coordination between functional teams?	Unclear	Success for some processes but not for some other processes
Seamless end-to-end service?	Yes	
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Unclear	There was no baseline taken at the commencement
Reduced costs?	Yes	
Improved customer satisfaction?	Yes	

4.7.5 The ITIL Project

4.7.5.1 Overview

The ITIL implementation project was initiated by the Global Chief Information Officer and Chief Information Officers of the various business units. The globalisation of IT was considered to be a direction to achieve an improved level of services to the business. The project was to standardise processes to drive consistent services to the global business and provide for efficiencies in the IT delivery. The company provided senior management commitment that was seen as a key to the success of the project. A project team was established utilising internal resources and consultants were engaged. The role of the consultants was to provide

coaching as to how to implement ITIL but not to perform the implementation. Consultants provided expertise that the company lacked. The ITIL implementation project commenced in May 2012 and completed in June 2013.

4.7.5.2 Tool

The cloud-based 'ServiceNow' was selected as the global IT Service Management tool. The deployment of the tool followed the development of the processes. The intention was to ensure that the tool met the requirements of the process. The company wanted to avoid a situation in which the tool required amendments after the deployment of the processes. The ServiceNow deployment required global access and included nine processes in ten languages.

Issues

The deployment did not encounter any specific difficulties.

4.7.5.3 Process

The company implemented the processes in two phases. The first phase consisted of Incident, Change and Request Fulfilment. Phase two included Configuration and Knowledge Management and a Service Catalogue. The processes were developed before the tool was implemented to ensure that the tool met the requirements of the processes. The processes were developed in a multi stage program. The processes were written as four levels of documentation with strict policies. Following the development of the tool the processes were tested against the tool with the tool needing to meet the requirements of the processes. The Process Owners and the Process leads were selected. The Process Owners are the hierarchical managers with the process manager responsible for delivery. The process leads were provided with advanced ITIL training and then worked with the process architects as the processes were further developed. The various process leads and consultants worked then as one team to produce the final integrated processes. The processes were developed to be conformant to the guidelines of ITIL.

Issues

Knowledge of and experience with ITIL implementations presented some difficulty during the development and implementation. The company lacked a background relating to ITIL implementations that resulted in additional requirements for the Program Leader who did have a background and experience. The interviewee stated that 'building the skills in the organisation that people understand their accountability, and that they have to lead the way, and have the decision making authority to take decisions. I think that was a big struggle; that means too much was on my plate' (B: 474-477). Difficulties were experienced with the prioritisation of the processes. The Program Leader had wanted to implement Service Level Management but the business had determined this was not a priority. However, part way into the implementation the business leaders decided that Service Level Management should be implemented. This was then considered too late and did not progress. Problem Management was deferred until later as it was considered to be of a lower priority and had still not been implemented at the time of the study.

4.7.5.4 Organisational Structure

The IT organisation of the business was significantly changed. The changes extended to the whole IT organisation and not just the area in which IT Service Management was delivered. Each of the seven business units globally had its own IT organisation. The revised structure reported as one organisation to a central point and was decided according to function. This included groups such as data centre and networks, personal IT and mobile devices and generic applications such as email. Other groups were established reporting to the IT leader that delivered ITIL processes. As previously stated a hierarchy of process owners and leaders was established. This provided a point of escalation. The company delegated the necessary authority to the process owners and leaders.

The new structure was implemented with a focus on communication. This included discussion papers, workshops and presentations. The intention was to ensure that all affected staff were prepared for the changes. At the time the organisational structure was implemented it was clearly understood by everyone.

Issues

The primary issue affecting the deployment of the organisational structure was the limited time frame available. Fifty different roles with descriptions were produced. The roles were already written into the processes but these also needed to be written for job descriptions. This was not fully completed. The job descriptions were required in ten languages to cover twenty countries. This was a complex requirement. Tasks for the program had to be performed by people who already had operational tasks thereby creating an impact on their normal roles.

4.7.5.5 People

Training

A significant training program was conducted. The process owners and leads were provided with advanced ITIL training. In total the company trained 140 staff to Practitioner level. In total 95 per cent of Australian IT staff and 33 per cent of overseas based IT staff achieved ITIL certification. Of the 140 staff trained in ITIL globally 'sixty or seventy people are in Melbourne, the rest are in 20 other countries' (B: 84-85). In addition internal training and train the trainer sessions were developed and delivered to all the teams impacted by the process and operational changes. ServiceNow was a new tool for the company. Training was provided to the teams that were required to use it.

The ITIL implementation project included changes to people management. Team and individual performance measures were introduced and career development plans included more advanced ITIL training.

Issues

A requirement for the new roles was that they were to be performed without increased salary. To overcome this issue the staff were provided with promotions but without additional income. Coincidentally for the first time in ten years the company did not give a staff bonus. This remains a significant issue from the deployment but it was driven by the economy and the organisational performance rather than the ITIL program.

The project had been anticipated by the staff for a number of years. A previous re-organisation had resulted in a reduction in the number of staff. There was concern with the staff that a similar outcome may occur. The requirement for the company was to identify process leads and determine if they could perform multiple roles with an acceptable workload. Negative, pessimistic staff worked within the affected parts of the company. These people could be vocal but they were seen as key to the implementation. A number of these staff members were targeted to attend workshops. It was considered that if previously negative staff could be seen to be supporting the new delivery then others would provide their support. Workshops were conducted globally with approximately 60 staff participating. The information provided at the workshops produced enthusiasm amongst the attendees including the previously negative staff.

As noted as an issue in the organisational structure section an issue was encountered related to the people component when new roles had not been filled with staff in time and existing staff were required to perform additional roles.

4.7.5.6 ITIL Implementation Summary

Table 4-13 summarises the ITIL implementation project.

Table 4-13 Case Study B ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	May 2012
	End	June 2013
Tool	Existing	
	New	✓
	Purchased	✓
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	
	Service Level Management	✓
	Problem Management	
	Knowledge Management	✓
	Request Fulfilment	✓
	Service Catalogue Management	✓
	Release Management	
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	
People	ITIL Training	✓
	Tool Training	✓

4.7.5.7 ITIL Implementation Issues Summary

The ITIL implementation program at Case B experienced a number of issues although there was not one specific distinguishing issue. Table 4-14 lists the issues identified and actions taken to resolve the issues.

Table 4-14 Case Study B ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	None stated	Lack of ITIL knowledge in the organisation Agreement on process priorities	Short time frame Complexity of multiple roles in multiple countries Not all new roles were filled in time	Minor – Salary Existing staff had to perform additional roles until all new positions were filled
Action to overcome	N/A	Build skills in the organisation – training Demonstrate benefits of required processes	None stated	None stated

4.7.6 Organisational Change

4.7.6.1 Organisational Change Strategy

The ITIL implementation was part of a major organisational change in the IT section of the company. IT was spread across twenty countries and the company moved to a global model from a regional and business unit based delivery. As part of the organisational change associated with the ITIL implementation and IT transformation, 70 per cent of the IT staff received revised job descriptions. Despite the broad extent and significance of the organisational change an organisational change strategy was not adopted. The Program Leader did refer to Kotter's eight step organisational change strategy but the steps were not actively followed. Aspects of Kotter's strategy were applied such as creating a sense of urgency but a review by the Program Leader of progress against Kotter's steps was not performed.

The organisational change applied during the ITIL implementation was based upon a discussion paper written by the Program Leader. The description of the activities by the Program Leader indicates that this was a plan to achieve the end goals but was not a specific organisational change strategy based upon recognised models.

The Role of Staff in the Organisational Change Strategies

The Program Leader selected a team of staff to participate in the organisational change. This included those who would become direct reports. This was partially conducted as a test to determine if the selected participants were capable to perform the expected roles after the implementation. The team members were selected for tasks to be achieved without the knowledge that they were being tested for a future role. These people conducted strategy sessions and workshops to progress the requirements of the change. The responses do not indicate that staff influenced the direction of organisational change strategies. Although as described above, the staff did participate in organisational change activities.

Reactive / Proactive

The ITIL implementation program is considered to be a Proactive change. The company was not reacting to specific events but identifying a growing need for improved services. The program could be planned as a consequence.

Implementation Type and Approach

The ITIL implementation can be described as punctuated equilibrium. This was a major project for the IT division of the company. It is clear from the secondary and primary data that the IT division on a global level had not been improved in terms of consistent process and practice. It is assumed that there was incremental change in the company prior to this project. However, this project was of a global nature and a major change for the IT in the organisation. This reflects the nature of punctuated equilibrium in which periods of incremental change are followed by a large change.

The implementation was undertaken with a phased approach. Three phases were applied. In the first phase reorganisation was completed by the 1st of October 2012. The first processes became live on the 14th of February the following year with the final processes implemented on the 13th of June.

The ITIL implementation is considered to be a revolutionary change. This was a complete transformation to the way in which IT services were managed. Comprising new tools, new processes, new positions and a global reorganisation this was significant project completely changing the delivery of IT services.

Organisational Change Approach

The company implemented ITIL with a Planned Change approach. The ITIL implementation established a program to implement ITIL on a global level and in doing so apply a significantly change to the way the company delivered IT services. Prior to the ITIL implementation the ITIL delivery was very inconsistent and not applied successfully in a number of parts of the world. The company's ITIL implementation program changed the existing delivery of IT services to a completely new way of delivering IT services. The company subsequently delivered consistent ITSM services throughout the world. The project was proposed by leaders with full support of the organisation. Planned change is leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and approaches undertaken is summarised in Table 4-15

Table 4-15 Case Study B Organisational Change Type and Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big Bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

4.7.6.2 An STS Approach

It was considered that as the tool ServiceNow was deployed to the cloud the effort required was less than with a conventional deployment. Nevertheless the tool still accounted for the largest effort of the ITIL implementation program. The requirement for the people component of the Leavitt Diamond was considered to receive the next largest effort with process and organisational structure equal as

receiving the least effort. The ranking according to the magnitude of effort is displayed in Table 4-16.

Table 4-16 Case Study B STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
Tool	1
People	2
Process	3
Organisational Structure	3

The relationship between STS components is displayed in Table 4-17. The complexity of the implementation of the new tool and the training in both ITIL and tool is reflected in the first and second ranking of magnitude of effort for technology and people. Organisational structure and process are both ranked equally as the least magnitude of effort. Although ITIL is a process based form of managing IT services the process component that included six processes required less effort than either technology or people components.

Table 4-17 Case Study B Relationship between STS Components

Process	# Processes Implemented	6
	Rank of Magnitude of Effort	3
Technology	Existing	
	New	✓
	Purchased	✓
	In-house	
	Rank of Magnitude of Effort	1
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	
	Rank of Magnitude of Effort	3
People	ITIL Training	✓
	Tool Training	✓
	Rank of Magnitude of Effort	2

The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-2. The ITIL implementation consisted of both new processes and a new tool. As a consequence training was required for both tool and process. Training was also provided for staff in the new roles. The new tool and the processes needed to be aligned to be functional. The STS components of the organisation as displayed in the Leavitt Diamond were provided with focus according to the needs of the implementation. The primary effort was provided to the components affected most.
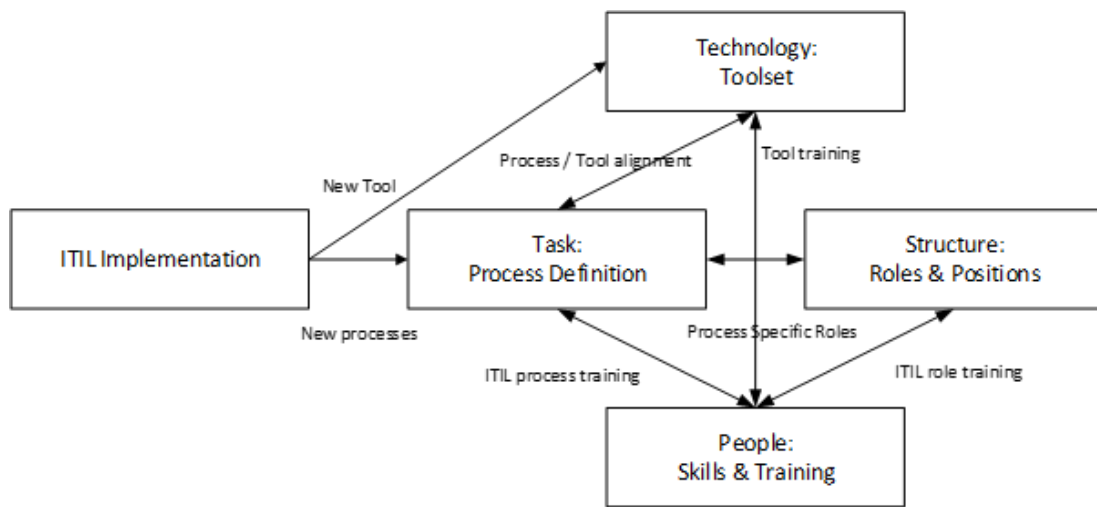
Figure 4-2 Case Study B Relationship Between STS Components in an ITIL Implementation

Case B did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the company did address the STS requirements of an organisation as depicted in the Leavitt Diamond. The ITIL implementation included new processes and new technology. These are both components of the technical component of the organisation. In recognition of the effect these changes brought to the company, new roles were created and new skills were provided. The social aspect of the organisation was adjusted to meet the requirements of the changes to the technical aspect of the organisation. This is a clear indication that the social and technical components of the organisation have been considered in regards to the change that is the ITIL implementation. Although Case B did not deliberately adopt a change management strategy that included an STS

approach it still did provide focus, as necessary, to the four STS components. It could be considered therefore that Case B did implement ITIL with an STS approach.

4.8 Case C

4.8.1 Organisational Overview

Case C is a national finance company that employs approximately 48,000 staff with approximately 65,000 PCs accessing IT services. A manager in the IT Service Management section of the company who had led the program of the ITIL implementation was interviewed for Case C.

4.8.2 Pre-implementation ITSM

ITIL had already been deployed in the company. However, this had occurred approximately ten years earlier and the tools and the processes were consequently of that age. Since implementation, ITIL processes had developed but this had not been reflected in the tool or in the processes that had been deployed ten years earlier. The majority of the original ITIL processes existed to some degree but they were generally not mature. Configuration Management in particular lacked the maturity that the company required. The core processes of Incident, Problem, Service Level and Change Management and Request Fulfilment were also considered to be lacking maturity. Issues identified included incidents were taking too long to resolve, there was a high rate of changes resulting in incidents, a large number of problems remained unresolved and there were many incidents occurring as repeats. The interviewee noted that 'the processes existed at varying levels of maturity, and they weren't too bad. We're not talking a zero, but maybe a two in some cases. They were horrendously manual, no interaction or interfacing between them at all' (C: 332-335). The processes were very manual and with little interaction between them. For example it was not possible to link an Incident record to a Change record when the Change caused the Incident.

The tool supporting the IT Service Management delivery was ten years old and heavily customised resulting in significant issues for upgrading. The tool was unreliable and unable to support the existing delivery. The company was wishing to expand into Asia and significant problems were anticipated as a result of the

expected additional load on the tool. Table 4-18 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-18 Case Study C ITSM Status Before ITIL Implementation

ITSM delivery	ITIL deployed 10 years earlier
	Processes & tool had not progressed
	Lacked maturity
	Performance poor
Process and Function	Incident, Problem, Service Level, Change, Configuration Management and Request Fulfilment
Tool	10 years old, heavily customised.
	Could not be upgraded
	Tool could not support expansion into Asia

4.8.3 Drivers of Change

The company had recognised that the systems and processes were outdated and unstable and preventing the optimal delivery of services. The company had changed over time to meet new business requirements but the ITSM had not progressed as quickly. This was recognisable in issues such as service disruption after changes, poor resolution times for 'Incidents' and unresolved 'Problems'. The tool was unreliable for current day services and it no longer had the capacity to support the company's planned expansion into Asia. The tool, while not meeting future needs, had been customised to the point it could no longer be upgraded.

Although the company had been having some discussion regarding the requirements of ITSM, it was the newly appointed General Manager of Technology Service Management who initiated the ITIL program. The program had management support. Table 4-19 summarises the drivers of the ITIL implementation change.

Table 4-19 Case Study C Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
10 year old tool heavily customised and could not be upgraded.	Yes	General Manager of Technology Service Management
Tool could not support requirements for growth.		
ITSM had not kept pace with business changes		

4.8.4 ITIL Implementation Success

The response to the question about the success of ITIL implementation was that the company has improved and continues to get better. The ITIL implementation met expectations in some areas, but other areas required improvement. Problem Management was cited as an example of a process that required improvements, with 'Incident' and 'Change Management' as other areas that could improve. Table 4-20 displays the results of the ITIL implementation success questions.

Table 4-20 Case Study C ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Partially	Some processes need improvement
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	No	Some improvement required
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Yes	
Reduced costs?	Yes	
Improved customer satisfaction?	Yes	

4.8.5 The ITIL Project

4.8.5.1 Overview

IT Service Management had not been a focus of the company until the commencement of a new General Manager of Technology, Service Management. Although there had been some discussion prior to the appointment there was no project or funding. The General Manager commenced discussions and a project with funding was initiated. Senior management support for the project was provided at the General Manager and the CIO levels. A project team was formed and an external organisation engaged to implement the delivery. A senior program manager was engaged and a steering committee formed. The program sought to review the IT services globally and use ITSM best practices applying ITIL Version 3. This included the phases of the ITIL lifecycle including Service Strategy, Service Design, Service Transition and Service Operations. An external ITSM Service Provider was engaged on a contract to support the organisation's team with the development of tool and process requirements. The company had previously engaged

the contracting firm for other programs. A range of metrics based upon service improvements were identified as objectives to be achieved. The ITIL implementation program commenced in late 2010 for a four year expected duration. At the time of the interview the program was in the third year.

4.8.5.2 Tool

The ITIL implementation program included the selection and implementation of a new tool to support the processes. The tool selected was CA's Service portfolio Management suite of tools and Xtraction, a dashboard and reporting tool. The tool suite was implemented after the development of the processes. The tool deployment was conducted in three stages. Different levels of maturity of ITSM delivery existed in different regions with the consequence that a big bang approach was not considered appropriate. The tool was deployed with minor changes only to the basic 'out of the box' functionality. The customisations undertaken were to enhance functionality. An example of the functionality enhancements was the ability to record multiple service impacts. This was included because the company had a requirement to understand the stability of the environment. The tool was deployed into production firstly in Asia, then New Zealand and finally Australia and India.

Australia and India are the largest IT operations in the company. The tool was deployed across an IT delivery encompassing thirty two countries. Difficulties specific to the tool implementation were not identified.

Issues

Difficulties encountered with the deployment of the tool included the very strict time frame and achieving a standardised delivery across the thirty two countries where the tools were deployed. Individuals had issues with the tool changes with reasons considered to be egos and prioritisation. The existing way of delivering IT was embedded in the organisational culture. The difficulties of the tool implementation were overcome in a number of ways. Support for the ITIL implementation was provided at CIO level and within senior executive ranks. The senior support facilitated the progress despite the resistance. Training was provided in significant amounts and this was escalated to ensure that people were on board with the new delivery.

4.8.5.3 Process

The ITIL implementation program included many of the ITIL processes. The secondary data did not list the specific processes. The development of the processes did not require starting from a clean slate. Processes already existed however they lacked maturity and governance as evidenced by the long resolution times of Incidents and unresolved Problems. The revised processes were developed with an alignment to standard ITIL terminology. The processes were tailored to meet the requirements of the company. This resulted in some contradiction to the ITIL framework but it produced an outcome of processes that supported business requirements.

Issues

No specific difficulties were encountered with the development and implementation of the ITIL processes.

4.8.5.4 Organisational Structure

The company had distinct teams established that included infrastructure, applications and networks. The Service Management team however was not a single entity. The organisational structure was significantly changed for the ITIL implementation. This required new roles including heads of sections and senior managers. The level of leadership included a senior executive reporting to the CIO. The roles were provided with the necessary level of authority required to support their requirements.

The new organisational structure was implemented in three months. This constituted three months of planning followed by a quick implementation. Some of the new roles and deliveries were developed from no existing capability. Configuration Management for example did not exist prior to the program. Existing staff that possessed knowledge of the delivery requirements were maintained but the next level required the employment of 3 or 4 new staff to fill roles. The new organisational structure was announced and the positions created within six weeks of the announcement. The new vacant positions were filled with staff within three months of the announcement of the new structure.

Issues

The organisational structure changes were implemented without difficulties to be overcome.

4.8.5.5 People

The ITIL implementation program resulted in variable impacts to the staff in the IT sections of the company. The view during the implementation was that the staff welcomed the changes as something they had wished to occur. A process manager in the previous structure would most likely have performed the same role in the new structure but with a new tool and new processes. The staff of the company had little involvement in the organisational changes. Selected staff led some parts of the program, but below that level there was minimal participation. There was not identified a requirement to address concerns or other human requirements in regards to the ITIL implementation. The program did not require a reduction of resources or cause job security concerns for the staff. Processes had already been deployed some years earlier and this program was to progress the process maturity. This resulted in additional opportunities within the company with a wide selection of roles on offer. This was considered to be a positive for the staff.

The training was provided to the staff in multiple streams. All staff in Service Management roles were required to undertake ITIL foundation training. In one year over one thousand people were trained in ITIL Foundation and over 200 in COBIT. Some members of the Service Management team undertook ITIL training in a specific stream such as service transition or continual service improvement. The company included a number of staff that had already received ITIL training and were certified to ITIL Masters or Expert level. Many of the staff were provided with training on the new tools. An online training application provided by CA was implemented to support the CA tool training. The training application was used for on line training in the CA tools that had been implemented. All IT staff were required to undertake training using the tool. Training in the delivery of the processes from an operational perspective was also provided. This was mandatory training for all technical staff. This training provided information as to the process delivered and how they were to be delivered as well as the importance of conformance.

Some of the staff were required to continue to use the old tools and processes as well as the new tools and processes during the transition period. This was anticipated to be a requirement that would be difficult for the staff. This needed to be managed and supported with empathy. Resources were managed through this with consideration of the difficulty of the circumstances.

Issues

No identified difficulties were encountered that required overcoming. It was considered that the training provided by the company was mature and that this addressed any potential issues.

4.8.5.6 ITIL Implementation Summary

Table 4-21 summarises the ITIL implementation project. All the processes have been indicated as implemented. The response regarding the processes implemented question was non-specific. Future references to the processes implemented will include those indicated in the table.

Table 4-21 Case Study C ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	Late 2010
	End	Estimated Late 2014
Tool	Existing	
	New	✓
	Purchased	✓
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	✓
	Service Level Management	✓
	Problem Management	✓
	Knowledge Management	✓
	Request Fulfilment	✓
	Service Catalogue Management	✓
	Release Management	✓
	Continual Service Improvement	✓
	Availability Management	✓
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	
People	ITIL Training	✓
	Tool Training	✓

4.8.5.7 ITIL Implementation Issues Summary

The ITIL implementation program experienced issues with the technology change only. Table 4-22 lists the issues identified and actions taken to resolve the issues.

Table 4-22 Case Study C ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	Standardising operations in 32 countries	None encountered	None encountered	None encountered
	Short time frame			
	Resistance to change			
Action to overcome	High executive support paved the way forward	N/A	N/A	N/A
	Training was provided			

4.8.6 Organisational Change

4.8.6.1 Organisational Change Strategy

A specific organisational change model was not applied to the ITIL implementation program. It was clear from the responses that a plan to achieve the desired outcomes of the project was developed and progressed however this did not constitute a recognised organisational change strategy. Clearly organisational change occurred. The information provided in the interview and the secondary data confirms this however there was not a specific action to identify an organisational change strategy and apply this to the ITIL implementation program.

The Role of Staff in the Organisational Change Strategies

The staff of the company was not involved in the design of the ITIL implementation or organisational change strategies applied. Specific staff were targeted for roles as process managers. There was no other indication of roles undertaken by staff in regards to organisational change strategies.

Reactive / Proactive

The ITIL program could be considered as proactive change. The program included a requirement to upgrade the tool. The tool was unable to be upgraded, was unreliable and could not support the expansion into Asia. It could be considered that replacing the tool was reactive. There was a need to perform this change in response to business needs that existing capabilities were hindering. However, the replacement of the tool as part of the ITIL upgrade could be planned indicating that this was proactive change. The upgrading of ITIL processes was proactive. An existing level of ITIL processes was already in place and while improvement was required there were not specific events or circumstances causing a need for change.

Implementation Type and Approach

The implementation of ITIL is described as a punctuated equilibrium type of change. The size of the implementation as a deployment across thirty countries and including new roles and delivery methods is significant and distinct compared to the incremental change assumed to occur prior to the project.

The implementation of ITIL was a phased approach. The service was implemented in three phases due to differing levels of maturity in different regions. The new delivery was implemented first into Asian and Oceanic regions, and then to India, New Zealand and Australia

As stated this was a major and complex change across regions and with new tools, processes and roles. However, this was not a new way of delivering IT service management for a major company. Although the project changed the way in which work was performed and services delivered the program was a development of an already existing ITIL delivery. This would be described as an evolutionary change. ITIL processes and supporting tools were in place prior to the implementation. This was a significant change but the requirement for a new tool, subsequent training needs, new roles and global deployment does not identify this as a revolutionary change. The company already had an ITIL delivery and tools. As such the changes were not a new way of working but a variation on the way they had been delivering ITIL services.

Organisational Change Approach

The company implemented ITIL with a Planned Change approach. The company already an existing ITIL based IT service delivery but they had identified the need for improvement and to implement a new tool. The ITIL implementation was a deliberate program to move from the existing delivery of IT services to a new delivery of IT services. The ITIL implementation program delivered a new tool and new processes and consequently a new maturity associated with IT Service Management. The project was proposed by leaders and supported by management. Planned change is leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and approaches undertaken is summarised in Table 4-23.

Table 4-23 Case Study C Organisational Change Type and Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	
Evolutionary	✓
Planned	✓
Emergent	

4.8.6.2 An STS Approach

The company recognised that balanced effort was not applied to the ITIL implementation program. The ITIL implementation program had a clear recognition that the focus needed to be on the people and that a failure with the people requirements could result in a failure of the implementation. When asked where the most effort was applied the interviewee stated that 'I think the people. So the communication, the training, the empathy. The project itself obviously had multi-millions of dollars in funding so there was a lot of resources expended on that, but

effort, I think focus, the people. We were aware that that was going to be the make or break for us' (C: 547-551). The organisation structure was considered to be the least effort. Due to the existence of the ageing process delivery there was already an organisation structure to some extent that could support the new delivery. The view was held that although there was still a great deal of effort applied to changes to the organisational structure it was still the lowest effort of the four phases of the Leavitt Diamond. The ranking according to magnitude of effort is displayed in Table 4-24.

Table 4-24 Case Study C STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
People	1
Process	2
Tool	3
Organisation Structure	4

The relationship between STS components is displayed in Table 4-25. Despite the implementation of a new tool the primary focus of the program has been people and process. The people component effort is affected by the requirement for both ITIL and tool training.

Table 4-25 Case Study C Relationship between STS Components

Process	# Processes Implemented	11
	Rank of Magnitude of Effort	2
Technology	Existing	
	New	✓
	Purchased	✓
	In-house	
	Rank of Magnitude of Effort	3
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	
	Rank of Magnitude of Effort	4
People	ITIL Training	✓
	Tool Training	✓
	Rank of Magnitude of Effort	1

The impact on the STS components of the Leavitt Diamond resulting from the implementation of ITIL is displayed in Figure 4-3. The ITIL implementation for Case C consisted of new processes and a new tool. A consequence of the new tool and processes is that training for each needed to be conducted. New roles and positions were created. Training was provided on multiple levels. Although not specifically stated it is assumed that staff in new roles received training in the requirements of the roles. The assumption is made because people components, including tool and process training, received the highest effort and focus. The training or the fulfilment of the people components was undertaken to enable them to possess the knowledge to perform those roles. The STS components of the organisation as displayed in the Levitt Diamond were provided with the focus according to the needs of the implementation.
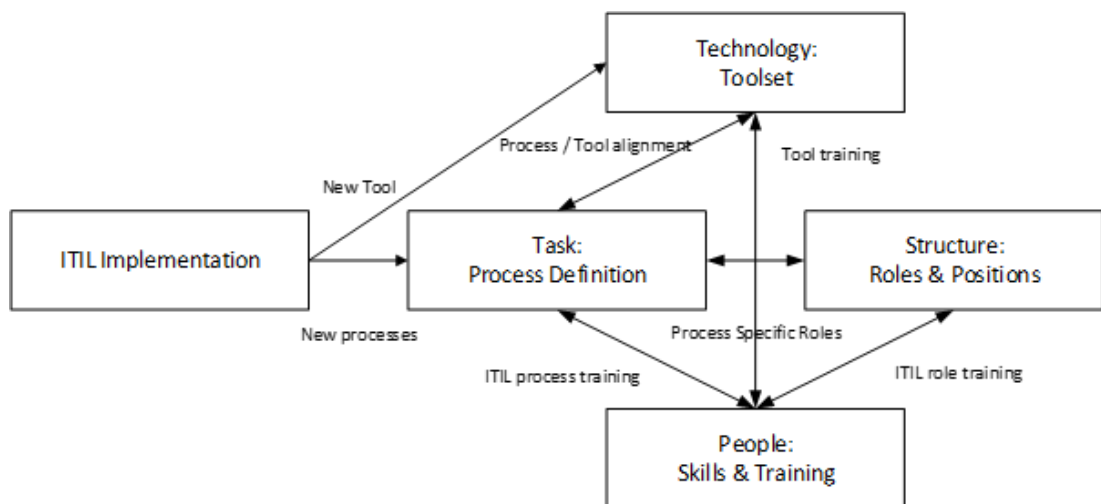
Figure 4-3 Case Study C Relationship Between STS Components in an ITIL Implementation

Case C did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the company did address the STS requirements of an organisation as depicted in the Leavitt Diamond. The company implemented new processes and new technology. These are both components of the technical part of the organisation. In response to these changes new roles were created and new skills provided with associated training. As a consequence the social component of the organisation was adjusted due to the changes to the technical

components of the organisation. Although Case C did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as necessary, to the four STS components. It could be considered therefore that Case C did implement ITIL with an STS approach.

4.9 Case D

4.9.1 Organisational Overview

Case D is a State Government Department. The Department consisted of 14,000 staff with approximately 32,000 PCs accessing IT services. The IT organisation referred to in the Case D study is one part of the overall IT organisation but delivers specific IT services. This IT section employs thirty two staff. The proposer and leader of the ITIL implementation were briefly interviewed for Case D. The participant agreed to support the research but time commitments resulted in a response to the questions in writing but without the full semi structured face-to-face interview.

4.9.2 Pre-implementation ITSM

Throughout the IT organisation ITIL had been implemented in an ad hoc manner. A Service Desk and some of the ITIL processes had been implemented. A problem identified with the existing processes was that there was a lack of consistency. Table 4-26 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-26 Case Study D ITSM Status Before ITIL Implementation

ITSM delivery	Ad-hoc delivery
Process and Function	Service Desk and some ITIL processes
Tool	An existing unnamed tool

4.9.3 Drivers of Change

In response to the question regarding problems with existing processes and systems the only answer was that there was a lack of consistency. As stated, ITIL had been implemented in an ad-hoc manner. Secondary data identified that a driver of the ITIL implementation program was the goal of ISO/IEC 20000 certification and a

demonstration of ITSM capability and enhanced credibility. The benefits to be gained from ISO/IEC 20000 certification include improved resource usage, service quality, continual improvement and staff acceptance.

The ITIL implementation program was implemented by the Director of the IT Division and received management support. Table 4-27 summarises the drivers of the ITIL implementation change.

Table 4-27 Case Study D Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
ITIL processes implemented ad-hoc across multiple agencies	Yes	The Director of the IT Division
Inconsistent delivery		

4.9.4 ITIL Implementation Success

The ITIL implementation was described as being successful and achieving expectations. Table 4-28 displays the results of the ITIL implementation success questions.

Table 4-28 Case Study D ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Yes	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Partial	Some services have been outsourced causing seamless coordination be difficult
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Yes	
Reduced costs?	Yes	In combination with other cost optimisation activities
Improved customer satisfaction?	Yes	

4.9.5 The ITIL Project

4.9.5.1 Overview

The IT section of Case D, a State Government Department, provides services to three State Government Departments, including its own Department, and considers the three as customers. The services provided include network operations, network support and security, the implementation of networks, IT Service Management and administration and finance functions. To this point a partial implementation of IT Service Management had been conducted. The IT section referred to the process delivery as ITSM and ISO/IEC 20000 rather than ITIL. The secondary data noted that ISO/IEC 20000 is closely aligned to ITIL. The ITIL implementation program commenced in November 2011 and completed in November 2012.

The IT section decided to pursue ISO/IEC 20000 certification. The drivers for this included the potential benefits to be delivered from a full ITSM process implementation, improved service quality and enhanced credibility. The credibility was considered important in the event that outsourcing may be considered. The expectation was that the benefits to be delivered would include improved use of resources resulting in increased productivity, improved staff acceptance of ITSM, a higher quality of service and the implementation of continual improvement.

4.9.5.2 Tool

A new tool to support the ITIL process was not required. An existing tool was used.

Issues

There were no issues identified with the tool requirements.

4.9.5.3 Process

The written response to the interview questions stated that all ISO/IEC 20000 processes were implemented. The secondary data stated that the processes of Incident, Problem, Change and Service Level Management and Request Fulfilment were implemented with less emphasis on other processes. A Service Catalogue was also implemented. The process requirements were determined by a contract consultancy organisation that had been engaged to manage the ISO/IEC 20000 certification. A gap analysis was conducted and the maturity of the existing processes determined. The consultants created the process documents based upon the gap analysis and the maturity assessment.

Issues

The response to the interview questions stated that difficulties were not experienced when implementing the new processes.

4.9.5.4 Organisational Structure

The implementation of ITIL processes and the ISO/IEC 20000 certification did not require adjustments or changes to organisational structure.

Issues

There were no issues identified in regards to the organisation structure component of the program.

4.9.5.5 People

The primary requirement for the people component of the Leavitt Diamond was to ensure that staff was trained in the new processes. The tool had not changed and the organisation structure remained as it was. As a consequence of changes to existing processes and the introduction of a new process, the training of staff was a requirement. Throughout the implementation program staff had been involved through workshops and training sessions. The interviewee stated that: 'a significant amount of communication was undertaken to keep staff informed of the goals of the project and the expected outcomes and their role in the project' (D: 110-112). The training provided consisted of workshops for each process and with each group that would be affected. The consultants engaged to oversee the certification program conducted the training.

Issues

No difficulties were identified or documented as a consequence of the people component changes.

4.9.5.6 ITIL Implementation Summary

Table 4-29 summarises the ITIL implementation project.

Table 4-29 Case Study D ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	November 2011
	End	End 2012
Tool	Existing	✓
	New	
	Purchased	
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	
	Service Level Management	✓
	Problem Management	✓
	Knowledge Management	
	Request Fulfilment	✓
	Service Catalogue Management	✓
	Release Management	
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	
	New Positions	
	Adjustments	
People	ITIL Training	✓
	Tool Training	

4.9.5.7 ITIL Implementation Issues Summary

The ITIL implementation was performed without any issues being identified or requiring actions to overcome. Table 4-30 displays the results of the questions asked regarding issues encountered during the ITIL implementation.

Table 4-30 Case Study D ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	None encountered	None encountered	None encountered	None encountered
Action to overcome	N/A	N/A	N/A	N/A

4.9.6 Organisational Change

4.9.6.1 Organisational Change Strategy

The organisational change associated with the implementation and adjustment of the ITIL processes was not part of a wider change strategy within the department. No specific organisational change strategy or recognised organisational change model was adopted for the program. In regards to the organisational change strategy applied the response provided was that 'No specific strategy other than good communication, workshops and training' (D: 71-72). The staff did not provide any input into the organisational change strategies.

The Role of Staff in the Organisational Change Strategies

The staff of the department played no role in the organisational change strategies.

Reactive / Proactive

The implementation of ITIL for this department is a proactive change. There was not an event or occurrence that necessitated the requirement to implement change. The department did not have a need to react to forces. The department planned the change and was aware of the need to be prepared for improved ITSM services.

Implementation Type

The change is considered to be a punctuated equilibrium type change. The existing ITSM delivery had remained as an ad-hoc delivery for approximately four years. The implementation was not part of an overall organisational change strategy. The responses indicate that the existing ITSM environment had remained stable for the last four years without other changes. The ITIL implementation was a significant change involving consultants, adjusted processes and delivery. Consequently this

change would be considered more significant than incremental change and there are no indicators that change is continuous.

The written responses to the questions did not clearly identify the implementation type as big bang or phased. Secondary data in the form of a presentation describing the project indicated a phased approach was applied. The project had a twelve month time frame and the implementation period is stated as six months. The project did not include a new tool or new roles.

Although the full time frame or schedule of the implementation is not clear the change is considered to be revolutionary. This was a major change in a short time frame. Although processes and a tool had previously been implemented the additional processes and the mandated requirement that they be conformed with is a total change to the previous delivery. This was a significant change to the manner of the delivery.

The department implemented ITIL with a Planned Change approach. The IT Service Management delivery prior to the implementation program was ad hoc and lacking consistency. The program required the certification for the ITIL standard of ISO/IEC 20000. The program to implement ITIL and obtain ISO/IEC 20000 certification changed the delivery from the existing condition to the desired state. The change was achieved by the deliberately establishment of a program of change that would move the department from the way it delivered IT services to a new way of delivering IT services. The project was proposed by leaders and supported by management. Planned change was leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and approaches undertaken are summarised in Table 4-31.

Table 4-31 Case Study D Organisational Change Type and Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

4.9.6.2 An STS Approach

An equal effort across the four components of the Leavitt Diamond was not applied. As a consequence of the use of an existing tool and not having a requirement for changes to organisational structure there was very little effort applied to those two components. However there was significant effort applied to the processes and the required people aspects. Table 4-32 displays the ranking of the magnitude of effort for the STS components.

Table 4-32 Case Study D STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
Process	1
People	1
Tool	3
Organisational Structure	3

The relationship between the STS components is displayed in Table 4-33. The greatest effort was applied to process and to people. New processes were implemented and ITIL training provided. An equal effort was applied to these two components. Changes to the organisational structure were not undertaken and an existing tool was used. This required little change effort and this is reflected in the

rank of magnitude applied. Organisational structure and technology recorded an equal and lowest magnitude of effort ranking.

Table 4-33 Case Study D Relationship between STS Components

Process	# Processes Implemented	6
	Rank of Magnitude of Effort	1
Technology	Existing	✓
	New	
	Purchased	
	In-house	
	Rank of Magnitude of Effort	3
Organisational Structure	New Roles	
	New Positions	
	Adjustments	
	Rank of Magnitude of Effort	3
People	ITIL Training	✓
	Tool Training	
	Rank of Magnitude of Effort	1

The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-4. The ITIL implementation for the department did not include a new tool or changes to the structure. This is reflected in the Leavitt Diamond. People and task were the primary affected components. New processes required an alignment with the existing tool and there was a need to train the staff in the new processes. This was the limited extent of the change undertaken.
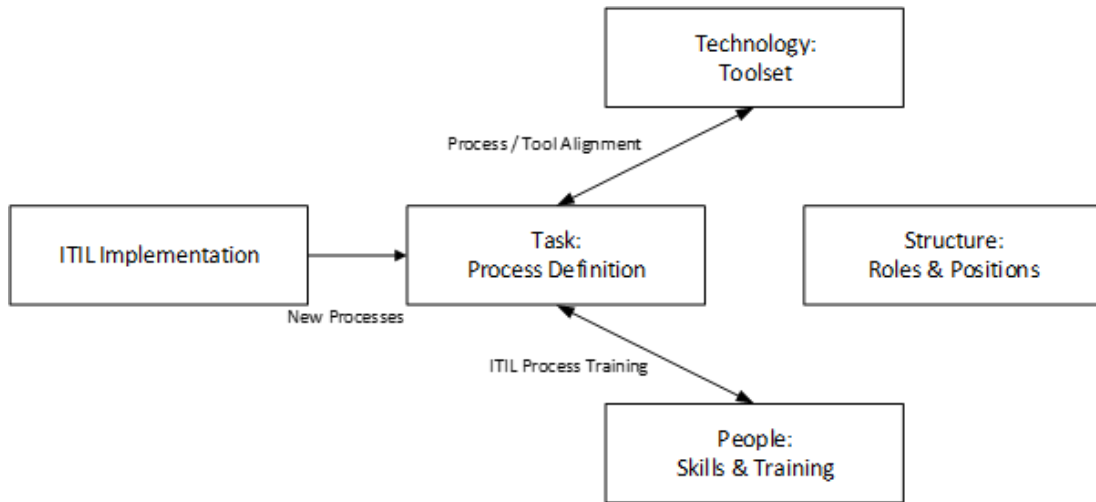
Figure 4-4 Case Study D Relationship Between STS Components in an ITIL Implementation

Case D did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the department did address the STS requirements of an organisation as depicted in the Leavitt Diamond. The department implemented new processes but maintained existing technology. New roles were not created and the structure component of the organisation was not affected. Training was provided thereby providing the skills required for the new ITIL delivery. This was not a change that affected all of the STS components yet the components that required adjustment were recognised and addressed. Although Case D did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as necessary, to the STS components. It could be considered therefore that Case D did implement ITIL with an STS approach.

4.10 Case E

4.10.1 Organisational Overview

Case E is a University that employs approximately 4,000 staff and provides service to users of approximately 4,500 PCs. The IT section consists of approximately 120 staff. The head of IT proposed and managed the ITIL implementation and was interviewed for Case E.

4.10.2   Pre-implementation ITSM

The university had implemented a decentralised Help Desk with members at various locations around the campus. Effectively the Help Desk consisted of technical support staff that were contacted directly and would respond to the call. There was no focus on achieving levels of service or escalation of jobs that could not be resolved. Incidents remained with the person that took the call even if they were absent on leave. Different areas of the university were receiving different levels of service depending upon who was actually delivering the service. A tool called Peregrine had been implemented to record Incidents. Table 4-34 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-34 Case Study E ITSM Status Before ITIL Implementation

ITSM delivery	ITSM not implemented
	Calls taken
	Ad-hoc response to calls
Process and Function	Decentralised Service Desk
	Some ad-hoc Incident Mgt.
	No processes
Tool	Peregrine

4.10.3   Drivers of Change

The management of Incidents was the primary issue identified with existing services. Resolution times for Incidents varied depending upon who it was assigned to and Incidents were not passed between support personnel when resourcing was an issue. There were not set levels of service and service levels varied across the university. Service Desk and Incident Management were the only ITIL processes implemented. The interviewee was unable to advise who had initiated the ITIL implementation and if management support was available at the commencement of the implementation. Table 4-35 summarises the drivers of the ITIL implementation change.

Table 4-35 Case Study E Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
Incidents not managed	Not stated	Not stated
Inconsistent views by customers of service		

4.10.4 ITIL Implementation Success

The ITIL implementation project was described as being successful. The university had not set expectations for the project and consequently it could not be stated that the implementation achieved or did not achieve expectations. The statement was provided that in review the project did achieve the expectations that could have been set. Table 4-36 displays the results of the ITIL implementation success questions.

Table 4-36 Case Study E ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Yes	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Partial	
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Yes	
Reduced costs?	No	Staff levels have remained the same
Improved customer satisfaction?	Yes	

4.10.5 The ITIL Project

4.10.5.1 Overview

The implementation of ITIL commenced in 2006. Rather than being conducted as a program with a start and end date, it is considered as a gradual but ongoing program, progressing process implementation. The ITIL implementation has been conducted primarily in house. There was some use of external consultants to provide an initial view of ITSM. The participant in the interview was the Manager of Customer Services yet the driver and initiator of the program was not identified. The responses indicated that the need for improvement has been recognised and that the ITIL implementation has progressed over time to meet that need. The ITIL implementation program commenced in 2006 and has not been considered to be completed. This is considered an ongoing program.

4.10.5.2 Tool

At the commencement of the ITIL implementation program a tool called Paradigm was used to support the ITIL processes. Paradigm was replaced with a tool called LANDESK. LANDESK supports multiple ITIL applications but the university chose to develop in house a web based Change Management tool. The Change Management tool replicates the approvals and other steps that would be included in purchased software that supports ITIL. LANDESK was selected according to requirements and price and implemented without difficulty.

Issues

The only issues affecting the selection and implementation of the tool were internal delays waiting for funding approval.

4.10.5.3 Process

The processes selected for implementation include Incident Management, Change Management and Knowledge Management. The Service Desk already existed. The primary focus was Incident Management. The processes were written by members of the IT team. Incident Management had already been occurring but required adjustment to fit the revised requirements and the new tool. The processes have further developed since implementation based upon customer demand and

feedback. It is considered that they align with ITIL process guidelines. Problem Management has now been implemented although it was not included in the initial deployment.

Issues

The primary difficulty encountered with the process development and implementation was adjusting the behaviour of the staff. There was a necessity to ensure that the staff understood why the changes were occurring. The interviewee explained the issue as 'behavioural change. Just getting people to understand why we are doing things' (E: 201-202). The behavioural issue was overcome by providing feedback and 'showing how it is improving their work life (E: 204-205). The focus of the technical staff had been on their own work and requirements. It was necessary to ensure that they recognised that this change was in regards to customer and providing customer focus.

4.10.5.4   Organisational Structure

An initial organisational structure was established with separate roles for the Process Managers. The roles of Process Manager existed for Incident, Change and Problem Management. Roles and positions were created to manage the processes.

Since the initial organisation structure changes occurred further changes have been made. The distinct process manager roles now no longer exist. The Process Manager roles are now performed by the traditional supervisor or leader. The Service Desk is responsible for managing incidents and knowledge. An application support leader performs the role of Problem Manager and the change management role rotates through various team leaders. The designation of authority to ensure conformance to the processes is unclear. It seems to be not defined at this time regardless of the position when implemented. There is not a senior leader responsible for the overall delivery of ITIL processes. Responsibility for process conformance is distributed across delivery leaders with all leaders responsible for their own delivery.

Issues

There were no known difficulties with the implementation of the new roles and positions at the time of the ITIL implementation.

4.10.5.5   People

The implementation of the new process resulted in a perceived view by staff they there was a requirement for additional work to be performed. The new tool required that additional recording of work undertaken be performed. As an in house implementation it has been documented previously that team members wrote and developed the new processes. Staff were consulted throughout the ITIL implementation. Feedback was provided in regards to processes and even the use of fields in the tool and naming conventions. The gradual transition and implementation provided benefits in regards to user acceptance of the processes and tools. The tool was implemented with an immediate impact but the processes transitioned into production over time. Certain benefits were immediately recognised thereby assisting the acceptance of the new ITIL services. For example, using a central software tool and a consistent process resulted in responses to Incidents even when certain technical staff were absent from work. The details were recorded in the tool and there was not the dependence upon a specific support person. The Incident could be resolved by others in the team.

Training was provided to the members of the IT section in regards to ITIL, tool and process. A number of the staff undertook ITIL practitioner training and a selection were provided with ITIL Foundation training. Training was also provided in the delivery of the processes and the use of the tool.

Issues

There was some resistance encountered as a consequence of the new processes and the training offered. Staff were accustomed to using their established terminology and resisted using ITIL terminology. There was also a reluctance to perform tasks according to ITIL and the new processes. Some of the staff wanted to continue to do what they had been doing prior to the ITIL implementation. There was not a specific action to overcome this resistance. With some staff only offering the resistance and others prepared for change over time the new way of delivering became accepted.

4.10.5.6   ITIL Implementation Summary

Table 4-37 summarises the ITIL implementation project.

Table 4-37 Case Study E ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	2006
	End	Ongoing
Tool	Existing	
	New	✓
	Purchased	✓
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	
	Service Level Management	
	Problem Management	✓
	Knowledge Management	✓
	Request Fulfilment	
	Service Catalogue Management	
	Release Management	
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	✓
People	ITIL Training	✓
	Tool Training	✓

4.10.5.7   ITIL Implementation Issues Summary

The primary issues encountered affected the staff during the ITIL implementation project. The interviewee identified issues with the staff accepting the implementation of the new processes. The resistance to change was overcome by demonstrating to the staff the benefits that the ITIL implementation would provide to them in improving their work life and also the improvements to the services to the customers.

The staff also expressed issues with the ITIL training. Difficulty was experienced by the staff in equating the training back to how they would be required to perform their roles. It was identified that the training was quite ITIL specific but not targeting the way in which they would be doing their day to day roles. Issues were also identified with the language or terminology applied in the training course and the requirement for the staff to become familiar with ITIL expressions. No action was taken to address the issues with the ITIL training. The staff became accustomed to the requirements and how it related to their roles and tasks. Delays and bureaucracy issues were identified as affecting the technology component. No action could be undertaken to address this. It was just necessary to wait and fulfil the requirements. Table 4-38 lists the issues identified and actions taken to resolve the issues.

Table 4-38 Case Study E ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	Internal funding delays	Resistance by IT staff	None encountered	Nature of ITIL training – disliked by some staff Resistance to change
Action to overcome	No specific action	Focus on benefit to clients Demonstrate benefits to be obtained	N/A	None taken. Change accepted over time

4.10.6   Organisational Change

4.10.6.1   Organisational Change Strategy

The implementation of ITIL was not conducted according to specific or recognised Organisational Change Strategy. The ITIL implementation was conducted as a program with a series of set task to be achieved. This included determining and implementing the tool, writing the processes, determining and implementing the organisational structure and providing training to the staff. However, this was not

conducted according to a view that this was an organisational change and that a methodology could be applied.

The Role of Staff in the Organisational Change Strategies

The staff was consulted with in regards to the organisational change strategies. The indication from the response is that staff provided some input into the changes being applied but it is not clear if they contributed to the determination of the organisational change strategies.

Reactive / Proactive

The ITIL implementation program is considered to a proactive change. There were not specific occurrences or events identified that resulted in a reactive decision to implement ITIL or to improve the delivery of ITSM. The implementation of ITIL has been planned as an improvement of the ITSM.

Implementation Type

The information provided in the interviews indicates that the ITIL implementation project has applied a variety of change approaches. The change is considered a punctuated equilibrium model of change. The change has been ongoing since the project commenced in 2006 with additional changes made to the ITIL delivery as required. At the time of the interviews further changes were to occur in regards to roles that were still temporary. Processes have developed further since implementation. The initial change would have been quite significant with a new tool and process requirements. Since that time ongoing incremental changes have occurred.

The implementation has been conducted with a phased approach rather than a big bang. There is no identified end date and change has continued to occur throughout the time since implementation commenced. The project implemented Incident Management initially followed by Change Management. Problem Management has now been implemented as part of the project. The ITIL implementation is considered to be an ongoing project.

The change strategy applied to the university would be described as revolutionary. The ITIL project resulted in a significant change to the way in which IT services are delivered. Although the implementation has been a gradual phased approach since the initial stages it is still appropriate to consider that change has been a transformation of the services provided. The ITIL implementation resulted in a new tool, new roles and new processes. The delivery of IT Service Management in the university was a major change from the services previously provided.

The organisational change type and the approaches undertaken is summarised in Table 4-39.

Table 4-39 Case Study E Organisational Change Type & Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

The university implemented ITIL with a Planned Change approach. The university commenced the program of change with a service desk taking calls and some Incident Management. The program to implement ITIL resulted in a new tool, new processes and a revised organisation structure. The university delivered this change with a program that would move the university from the way it delivered IT services to a different way of delivering IT services. The support from leadership is unclear although funding for a new tool and new roles was provided. This would indicate that there was support provided. Planned change is leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

4.10.6.2   An STS Approach

The initial effort for the ITIL implementation focused on the processes and tool. However, following that was significant effort was applied to the people aspects. The implementation was not balanced as it was not an equal effort across all four aspects of the Leavitt Diamond. The ranking of the magnitude of effort applied is displayed in Table 4-40.

Table 4-40 Case Study E -STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
People	1
Process	2
Tool	3
Organisational structure	4

The requirement for both ITIL and tool training identifies the requirements for significant focus on the people components. The people component recorded the highest magnitude of effort ranking. The implementation of four processes has consumed focus and effort with the consequence of the second highest ranking of effort. Tool and organisational structure were the lowest ranked however there was still a requirement for attention to ensure that the project was successful. A new tool was purchased and new roles and positions created. These components still required effort to ensure their successful implementation. Table 4-41 displays the relationships between the STS components.

Table 4-41 Case Study E Relationship between STS Components

Process	# Processes Implemented	4
	Rank of Magnitude of Effort	2
Technology	Existing	
	New	✓
	Purchased	✓
	In-house	
	Rank of Magnitude of Effort	3
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	✓
	Rank of Magnitude of Effort	4
People	ITIL Training	✓
	Tool Training	✓
	Rank of Magnitude of Effort	1

The ITIL implementation for Case E consisted of new processes, a new tool, changes to the organisation structure and training. The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-5. The tools and the processes need to be aligned and training is provided for the use of the tools and the processes. The structure is affected with the new roles and the requirement to enable the persons in the roles with the knowledge necessary to fulfil the requirements.
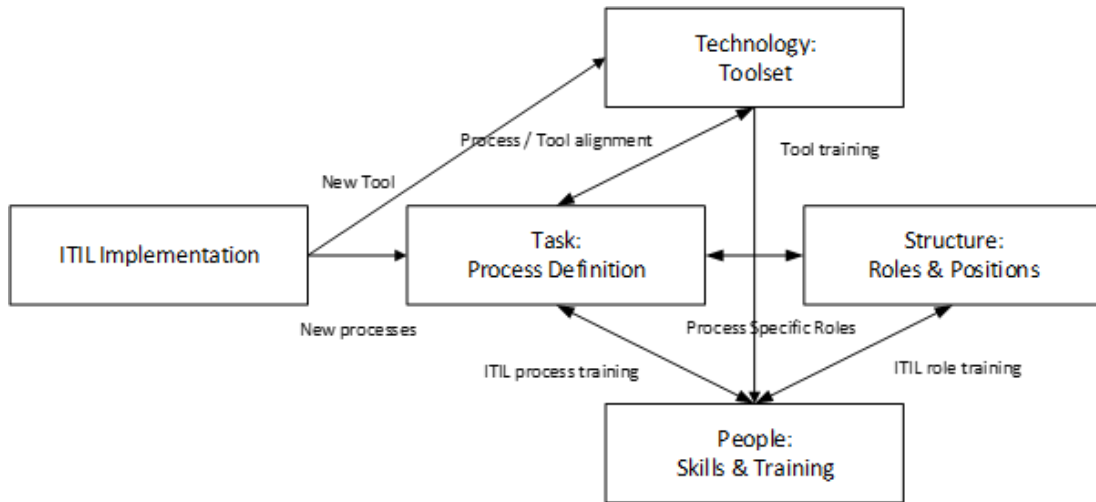
Figure 4-5 Case Study E Relationship Between STS Components in an ITIL Implementation

Case E did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the university did address the STS requirements of an organisation as depicted in the Leavitt Diamond. The implementation consisted of new processes and new technology. The change therefore to the technical components of the organisation was significant. Focus on the social components is recognised with the people component as being provided with the highest effort. The structure component was provided the attention considered necessary to achieve the adjustments required. Although Case E did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as necessary, to the four STS components. It could be considered therefore that Case E did implement ITIL with an STS approach.

4.11 Case F

4.11.1   Organisational Overview

Case F is a section of a State Government Public Service department consisting of approximately 1,200 staff with approximately 2,000 PCs accessing services.

4.11.2   Pre-implementation ITSM

Prior to the ITIL implementation some ITIL based ITSM had been implemented. Change Management had been implemented but was delivered inconsistently and the

departmental section lacked the discipline to enforce the process. Other processes had not been deployed although processes had been written. The processes were not being followed, were not enforced and were not considered necessary. The processes were not aligned with each other and there was not a requirement to improve delivery. A tool called Alloy Navigator had been implemented to support the existing processes.

Prior to the ITIL implementation, problems had been identified with the service delivery. The processes that existed were not being enforced. Some processes had been selected and documented but there was no enforcement and no improvement to the delivery. Table 4-42 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-42 Case Study F ITSM Status Before ITIL Implementation

ITSM delivery	Limited
Process and Function	Some processes, including Change Management
	Processes not followed
	Policy not enforced
Tool	Alloy Navigator

4.11.3 Drivers of Change

A number of problems were identified with the existing delivery of IT services. The ITIL processes that had been written were not considered to be suitable and they were not being followed. The processes were not being enforced. The ITIL implementation was proposed by the Chief Executive Officer (CEO). No reference was made to management support not being provided and funding and resources were provided for the program. Table 4-43 summarises the drivers of the ITIL implementation change.

Table 4-43 Case Study F Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
Processes were poor	Unknown	CEO
Processes not being followed		
Processes not enforced		

4.11.4   ITIL Implementation Success

The ITIL implementation project was considered to be highly successful with the qualification that there is still significant work to be performed. This was clarified by comments that the implementation to date has been successful but the service delivery is still immature. Table 4-44 displays the responses to specific questions regarding the success of the ITIL implementation.

Table 4-44 Case Study F ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Not stated	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Yes	
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Yes	
Reduced costs?	Yes	
Improved customer satisfaction?	Yes	

4.11.5 The ITIL Project

4.11.5.1 Overview

The ITIL implementation was initiated by the CEO and consequently had senior manager support. The project to implement ITIL commenced with an external consultant acting as an advisor and the creation of three related projects. The first project included the design of the ITIL operational requirements. The second project developed and implemented the Request Fulfilment and Configuration Management processes with the third project focusing on Change and Release Management. The approach taken was that the existing processes should evolve to the new delivery with utilisation of existing roles. The implementation of ITIL commenced in June of 2013. The duration was planned for 18 months to two years. The program has been progressing for six months at the time of the interview.

4.11.5.2 Tool

The ITIL implementation program used existing tools. The decision was made to not rule out a future tool change but to not include it at this time. The existing tool, Alloy Navigator, was maintained.

Issues

There were no issues identified with the tool component of the implementation.

4.11.5.3 Process

The processes included in the ITIL implementation were Incident, Change, Configuration, Release, Problem and Service Level Management. The processes closely align with the ITIL documentation. The processes were developed from a starting point of the objectives of the departmental section and provided additional information where the consultants considered that ITIL had gaps. This was to ensure that the staff of the departmental section understood the processes and requirements. Change Management and Request Fulfilment have been closely aligned with each other. This alignment provides an organisational specific outcome suiting the clients of the services. Release Management is also closely aligned with Change Management. Configuration Management has been deployed but is undergoing further changes in alignment with the requirements of Alloy Navigator. Problem

Management has not yet been implemented but the intention is to do so when appropriate.

Issues

The primary difficulty associated with the implementation of the processes has been with Service Level Management. The definition of services provided has not been previously undertaken. It has proven difficult to gain agreement on the service definitions with the customers. This has taken longer than expected and is still not complete.

4.11.5.4 Organisational Structure

The development of the organisation structure is still ongoing. New roles have been created but they have not been fully implemented. The roles were still temporary. People were acting in the roles of process managers but the appointments to the positions were yet to be finalised.

Issues

The temporary nature of the new roles has created some difficulties. The process roles are additional to the existing roles. The response to this has been varied with some more capable than others in combining the old and new roles. In general terms some staff have adjusted to the roles and delivery better than others.

4.11.5.5 People

The impact on staff of the ITIL implementation has been varied. Some staff have responded very well to the changing requirements whereas others have taken longer. There have been very willing staff and others reluctant to change. In some cases the changes are the way in which the roles should have been performed rather than an additional workload.

Training was provided to all staff in the IT section. All IT staff were provided with ITIL Foundation training. This is ongoing as the deployment completes. Staff were also provided with training as to how the processes are to be delivered.

Issues

The staff did have some concerns which were considered by the interviewee to have 'been more a misunderstanding of what the impact was going to be in the area as opposed to the actually implementing of many key roles (F: 412-413). Communication with the staff was seen as important while working through their issues. The communication included discussions with the staff regarding their issues and identifying the support they needed. This was described as mentoring and hand-holding by the interview participants.

4.11.5.6 ITIL Implementation Summary

Table 4-45 summarises the ITIL implementation project.

Table 4-45 Case Study F ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	June 2013
	End	Estimated June 2015
Tool	Existing	✓
	New	
	Purchased	
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	✓
	Service Level Management	✓
	Problem Management	✓
	Knowledge Management	
	Request Fulfilment	
	Service Catalogue Management	
	Release Management	✓
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	
People	ITIL Training	✓
	Tool Training	

4.11.5.7   ITIL Implementation Issues Summary

Concern was raised in regards to roles affecting both people and organisation structure components. Communication with the staff was applied to overcome the concerns regarding the new roles. Service Level Management was the only process that encountered issues and these issues were still unresolved. The difficulty encountered was the definition of the services with the non-IT internal customers. Table 4-46 lists the issues identified and actions taken to resolve the issues.

Table 4-46 Case Study F - ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	None encountered	Lack of defined services with client – affecting SLM	Minor – Resistance to of new roles	Impact of the change
Action to overcome	N/A	Incomplete and ongoing. Action not stated	No action stated	Communication / mentoring

4.11.6   Organisational Change

4.11.6.1   Organisational Change Strategy

The implementation of ITIL was part of an organisational change requirement to improve the service management capability. However, an organisational change strategy was not adopted or applied. The project was managed using program management techniques with the response from the interviewee that 'we were just having a go at program management' (F: 183). The response by the interview participants was clear that they did not consider an organisational change strategy or model to apply.

The Role of Staff in the Organisational Change Strategies

There was no indication provided that staff had a role in the organisational change strategies.

Reactive / Proactive

The ITIL implementation is considered to be a proactive change. There was no reference to any events or circumstances that indicated that the implementation was in response to external or internal forces.

Implementation Type

The change model applied to this ITIL implementation would be described as punctuated equilibrium. The initial stage of the change was a significant difference to the previous manner of delivery and since that time incremental changes have been applied. It could be considered that some of the changes to be applied after a period of stability are repeats of the punctuated equilibrium approach. The initial requirement of moving from an ad hoc approach to Incident Management to process implementation and conformance is a significant change in itself that conforms to the model of the punctuated equilibrium approach. The additional changes to the Service Desk and implementation of new processes are the incremental changes that have occurred since the initial significant change.

The change implementation has been a phased approach. There has been no big bang of new processes and tools at one time. The deployment has been gradual with changes to processes and tools phased over a period of time. This is as yet unfinished.

Organisational Change Approach

The approach taken by the departmental section is a revolutionary approach. The ITIL implementation is a significant change. The departmental section has moved from an ineffective partial IT Service Management delivery to a new delivery method with new processes and new roles. This has been a major change to the method of delivery and not just a progression of an existing service delivery. The staff had to learn to deliver IT services in a new way and the organisation receives IT services according to the ITIL methodology. The method of delivering IT services has been transformed.

The departmental section implemented ITIL with a Planned Change approach. The departmental section commenced with a limited Change Management process and

other processes that were not enforced. The ITIL implementation program delivered a change in the delivery that includes new processes, new roles and new skills. The program is still in progress. The departmental section has undergone a deliberate strategy to change the departmental section from the way it delivered IT services to a completely new way of delivering IT services that includes ITIL processes. The project was proposed by leaders and supported by management. Planned change is characterised by being leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and approaches undertaken are summarised in Table 4-47.

Table 4-47 Case Study F Organisational Change Type & Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

4.11.6.2   An STS Approach

The ITIL implementation project was not undertaken with a balanced effort. The tool had not changed and the organisational structure change was incomplete. The people and process components were the primary focus of the changes. Table 4-48 displays the effort provided to the four components of the Leavitt Diamond.

Table 4-48 Case Study F STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
People	1
Process	2
Organisational Structure	3
Technology	4

The relationship between the STS components is displayed in Table 4-49. The implementation of six processes and the subsequent training of staff has resulted in the people component being the primary focus of the STS components. The people component recorded the highest magnitude of effort ranking despite a limited requirement for training. As an existing tool was used there was no requirement for tool training. New roles and positions were implemented with greater effort than technology changes. An existing tool was retained reducing the effort required for this component. In retrospect the interviewee considered 'when we started out, we didn't really ignore the tools. We were quite surprised that we didn't really look at the tools initially' (F: 461-462).

Table 4-49 Case Study F Relationship Between STS Components

Process	# Processes Implemented	6
	Rank of Magnitude of Effort	2
Technology	Existing	✓
	New	
	Purchased	
	In-house	
	Rank of Magnitude of Effort	4
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	
	Rank of Magnitude of Effort	3
People	ITIL Training	✓
	Tool Training	
	Rank of Magnitude of Effort	1

The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-6. The ITIL implementation for Case F required new processes but an existing tool was retained. The retaining of the tool is reflected in the absence of a training requirement. The organisation structure changes included new roles and positions.

The STS components of the organisation were provided with focus according to the needs of the implementation. The primary effort was applied to the components that were affected the most.
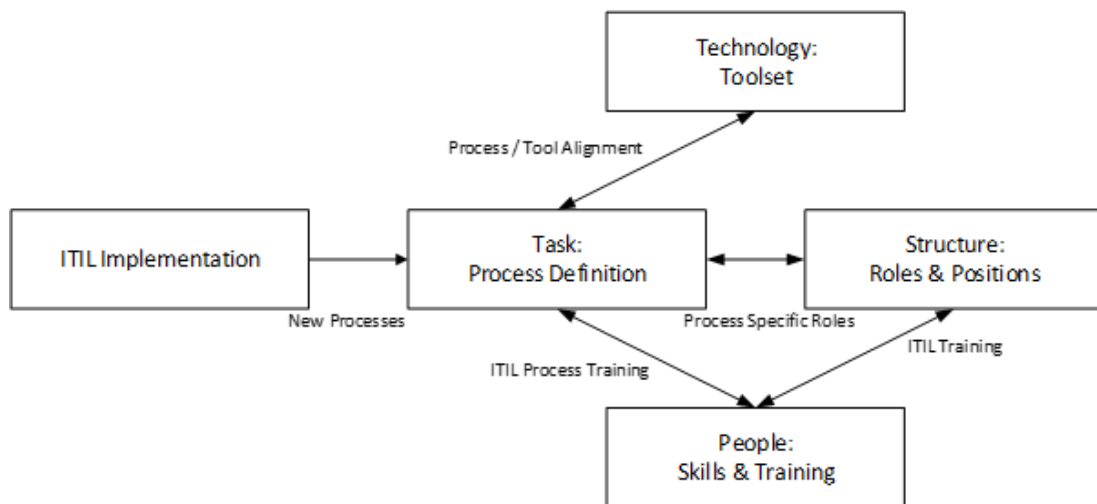
Figure 4-6 Case Study F Relationship Between STS Components in an ITIL Implementation

Case F did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the departmental section did address the STS requirements of an organisation as depicted in the Leavitt Diamond. The departmental section implemented new processes and maintained an existing technology. These changes to the technical components of the organisation were subsequently reflected in the social side with further changes. New roles were created and new skills provided. The social part of the organisation was provided with the focus required in response to the changes made to the technical part of the organisation. Although Case F did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as necessary, to the

four STS components. It could be considered therefore that Case F did implement ITIL with an STS approach.

4.12 Case G

4.12.1   Organisational Overview

Case G is a university that employs approximately 1,300 staff with approximately 60 in the IT section. Approximately 3,000 PCs, including those used by students and staff are supported by the IT section. The Director of the IT section proposed and program managed the ITIL implementation.

4.12.2   Pre-implementation ITSM

Prior to implementing ITIL a simple ticketing system called HBO was in place to record Incidents. There were no processes or policies in place. A Service Desk was in place but only to receive calls regarding Incidents. Table 4-50 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-50 Case Study G ITSM Status Before ITIL Implementation

ITSM delivery	Limited
Process and Function	Incident Management Service Desk
Tool	HBO

4.12.3   Drivers of Change

The university was concerned with issues associated with changes that caused service disruptions and a lack of focus on the customer. ITIL processes had not been implemented. The ITIL implementation was proposed by the Manager of the Data Centre and Support Teams who had the view that standardised processes were the best way to manage IT and provide services. The Director of IT was supportive of the program but initial support from the university's executive level was not provided. Despite the lack of initial support the program proposal was not declined. Executive support has not been fully provided. Table 4-51 summarises the drivers of the ITIL implementation change.

Table 4-51 Case Study G Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
No ITIL processes implemented	Immediate leader support – Yes	The Manager of the Data Centre and Support Teams
Changes causing service disruption	Executive level - Not initially	
Lack of client focus		

4.12.4   ITIL Implementation Success

The ITIL implementation program was considered to be successful and meeting the expectations. Table 4-52 displays the results of the ITIL implementation success questions.

Table 4-52 Case Study G ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Yes	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	Yes	
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Partial	An improvement
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Partial	An improvement
Enhanced productivity?	Yes	
Reduced costs?	Yes	
Improved customer satisfaction?	Yes	

4.12.5 The ITIL Project

4.12.5.1 Overview

The project was initiated by the current Director of IT although at the time he was the Manager of IT Delivery. The Manager of IT Delivery had a background in mainframe operations prior to leading the IT section and had experienced the standardised business processes that IBM used in regards to managing IT. There was recognition that the changes made were causing damage to IT services. The intention was considered to be good but the client was not the primary focus. Support was provided by the existing Director of IT and funding was provided for the necessary training. Support at board level was not forthcoming and there was a view that ITIL was a phase or a fad being progressed. Despite this view, the ITIL implementation was not opposed. The initial project team was comprised of the members of IT that had some knowledge of ITIL. A core group of five or six staff received ITIL training and the project team developed the ITIL implementation requirements during a series of workshops. The ITIL implementation is considered as a long and ongoing program commencing in 2004. An end date has not been identified and adjustments continue to be made.

4.12.5.2 Tool

The university has developed in house a tool for supporting the ITIL processes. The university had conducted a review of existing software at the time and determined that there was nothing in the market that met their needs. The existing basic tool in use could not be customised to meet the needs of the direction required. A purchased tool based upon commercial needs was considered not required. An internal team of developers was producing a tool specifically for their organisational needs and purpose. The team members have Oracle capabilities and work on this tool on an ongoing basis in conjunction with other delivery requirements.

Issues

Difficulties had been encountered through the development and implementation of the tool. The primary issue encountered was that there were existing staff who wanted a new system to be similar to the existing system. The Manager of the Business Systems team did not believe that the direction taken had been the correct

choice and attempted to divert the development of the tool in house to meet different needs. The view of the Manager of the Business Systems was that the new tool should be similar to the existing basic tool but this would also inherit the flaws of the existing system. This issue was overcome with the rapid development of the tool in the direction required by the IT section. The benefits were provided as soon as possible and the future direction of the development of the tool established.

4.12.5.3   Process

The processes identified for implementation included Incident, Problem, Configuration and Change Management and Request Fulfilment. Service Level Management was implemented but to a lesser degree. The processes were developed in house by engaging members from various teams and developing process flows that met their requirements. The processes were validated to ensure that they included interfaces with other processes. Process owners were identified who were responsible for the process itself but not the delivery of the process. The owners were then responsible for the processes, reviews of the processes and providing feedback to the team developing the tool.

Change Management was the first process implemented with Incident Management and Request Fulfilment following but implemented jointly. Problem and Configuration Management were implemented later. Service Level Management (SLM) had been implemented gradually over time. SLM was not tool dependent and therefore progress was not prevented as a result of tool requirements.

Issues

The implementation of the processes did encounter difficulties associated with resistance by staff. The difficulties persisted until the ITIL training had been completed and the affected staff had developed an understanding of ITIL and the language used. Informing the teams and their members of the new delivery and of the processes was crucial in overcoming the resistance. The researcher was advised by the interviewee that the issues associated with the implementation of the processes were overcome by an approached described as: 'just kept banging away at it. Reinforcing it at the internal training in particular. Presentations of the processes,

going back through the processes, taking them to exercises as far as how things were supposed to work. We just kept at it' (G: 543-545).

4.12.5.4   Organisational Structure

Throughout the ITIL implementation the university has undergone a number of changes to the organisational structure. Initially positions such an Incident, Problem and Service Level Managers were created. As the delivery of the processes evolved adjustments were made to the process manager roles. The Incident Manager role was moved into the Service Desk and the Problem and Change Management roles were combined and performed by one person. Service Level Management is performed by one role. The Process Managers all report to the Manager of IT as do the leaders of the delivery teams. The Process Managers have been provided with the appropriate level of authority necessary. There were multiple changes to the structure of the IT organisation until it is now believed that the optimal arrangement has been achieved.

Issues

There were no issues identified with the changes to the organisation structure.

4.12.5.5   People

Training has been provided to all members of the IT section. Initially a selected number of staff, including the Manager of IT, undertook formal ITIL training. Eventually all staff underwent ITIL training. An internal training tool has been implemented that enables all staff to undergo ITIL Foundation level training but without the certification. The determination for training is part of the responsibilities of the process owners. The training program therefore has been a combination of ITIL training with certification for selected staff and internal ITIL Foundation training for the remainder of the IT teams. New staff were required to undertake the on line Foundation training to ensure that all staff has the necessary knowledge and skills.

There was no reference made to tool training. As the tool is developed in house, the users already have an understanding of the tool. It is anticipated that for the users of the tool to successfully use it there had been instruction or knowledge development at some point in the ITIL implementation.

Issues

The response by staff to the ITIL implementation was generally positive however, as mentioned previously, there was some resistance. It is considered that most staff recognised the value of the changes being made and it led to clarity in their roles. The staff closer to the clients realised the benefits more quickly. The training of the staff and the overall information process overcame the resistance that was evident initially.

4.12.5.6   ITIL Implementation Summary

Table 4-53 summarises the ITIL implementation project.

Table 4-53 Case Study G ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	2004
	End	Ongoing
Tool	Existing	
	New	✓
	Purchased	
	In-House	✓
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	✓
	Service Level Management	✓
	Problem Management	✓
	Knowledge Management	
	Request Fulfilment	✓
	Service Catalogue Management	
	Release Management	
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	✓
People	ITIL Training	✓
	Tool Training	✓

4.12.5.7   ITIL Implementation Issues Summary

The primary issues affecting the implementation of ITIL relate to acceptance of the tool and the processes. These issues were addressed by providing the staff with training and information and by producing the tool similar to the former tool. Table 4-54 lists the issues identified and actions taken to resolve the issues.

Table 4-54 Case Study G ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	Initial lack of support for a new tool	Resistance by IT staff	None encountered	Some resistance
	Resistance by IT staff			
Action to overcome	Implement close to a like for like old system and maintain improvements over time	Training, information	N/A	Training and providing information
	Demonstrate ease of use to gain acceptance			

4.12.6   Organisational Change

4.12.6.1   Organisational Change Strategy

The implementation of ITIL was not part of a wider organisational change strategy. This was viewed as a change within the IT section that would provide benefit to the university. The university did not apply a recognised organisational change strategy to the ITIL implementation. The program direction was dictated by an identification of tasks to be achieved that would enable a direction to the desired outcomes. However, this was not a deliberate organisational change strategy. The interview participant provided a clear response regarding the lack of an organisational change strategy.

The Role of Staff in the Organisational Change Strategies

The staff participated in an internal consultative process during the implementation. A very high turnover of staff in the university has prompted the establishment of communication and inclusion of staff in organisational change. This is considered evident in the low turnover in staff in IT compared to the wider organisation. Although not clearly stated it seems to be indicated that the staff have had a role in the organisational change strategies.

Reactive / Proactive

The ITIL implementation program is considered to be a proactive change. The recognition was provided that standard processes were a better way of delivering IT and services. There was not a reaction to a specific event or circumstance that resulted in the program.

Implementation Type

The ITIL implementation is considered a punctuated equilibrium approach to change. The duration of the project has been lengthy and the gradual incremental changes have been made. The implementation of ITIL and the changes to the delivery are a significant change to the previous delivery of IT Service Management. The initial change to IT Service Management from a delivery based on no formal processes to a delivery of processes, new roles and a tool is significant. Subsequent changes have been incremental. The implementation of ITIL has been a nine year program. Throughout the implementation the changes have been applied and adjustments made as required based upon feedback from the university. The development of the tool is ongoing and responses indicate that this is part of the normal role of the developers in the team.

The implementation approach is as a phased change. The change to the delivery of IT services has occurred over a nine year period to the time of the interview. There has been no big bang but an ongoing series of changes and adjustments.

The delivery of IT services has been transformed. This is a revolutionary change. The university has moved from a simple tool and no formal processes to multiple processes, a new tool and new roles. This has resulted in a complete transformation

217

in the manner of the delivery of IT services. Subsequent delivery change and process implementation has been gradual as has been the deployment of the tool. It could be considered that the delivery is evolving over time. However, the actual ITIL implementation is a significant method of delivery of services affecting all IT staff and the IT delivery to the university.

Organisational Change Approach

The university commenced the ITIL implementation with a planned change approach. The program was initiated when the university's IT service delivery consisted of a simple ticketing system, a service desk and Incident Management but without a formal. The ITIL implementation has since progressed over a long period of time to an in house tool, new processes, organisational structure change and skilled staff. The university has deliberately moved from the state that it was in to the new state of delivery. The change was provided with leadership support that developed to management support. These are characteristics of a planned change approach. The ITIL implementation program has progressed for nine years to the time of the interview and has no established end date or end criteria. Continual Service Improvement is not an ITIL process included in the implementation project although it could be considered that the nature of the change is conformant with that process. The roles, processes and tool have been continually adjusted throughout the project to meet the needs of the university.

The organisational change type and approach undertaken is summarised in Table 4-55.

Table 4-55 Case Study G Organisational Change Type & Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	✓
Planned	✓
Emergent	

4.12.6.2　　An STS Approach

The university provided varying effort to the four components of the Leavitt Diamond. The variation was due to the amount of effort required or determined to be needed. The greatest effort was provided to the development of the processes and then people. However, the responses are conflicting in this regard. Part of the commitment to the processes is viewed as the amount of training that was required in regards to the processes. The view was held that this effort was required to maintain the consistency of the delivery of the processes. The distinction between the effort required for process and people was provided with the response that 'by far it was the process. I mean if the process isn't consistent, if the process doesn't connect both externally to meet the business requirements and internally so you can get the information to move within the teams. That's the bit that would always seem to fall to bits' (G: 700-701). Table 4-56 displays the ranking of the four components according to the magnitude of effort provided.

Table 4-56 Case Study G STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
Process	1
People	2
Tool	3
Organisational structure	4

The relationship between the STS components is displayed in Table 4-57. Implementing the six new ITIL processes has resulted in the highest recorded magnitude of effort ranking. The people components including the training for ITIL and the tool have returned the second highest effort ranking. A new tool was developed in house but the effort was still ranked behind process and people components. Organisational change required new roles and positions but still was provided with less effort than the other components.

Table 4-57 Case Study G Relationship Between STS Components

Process	# Processes Implemented	6
	Rank of Magnitude of Effort	1
Technology	Existing	
	New	✓
	Purchased	
	In-house	✓
	Rank of Magnitude of Effort	3
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	✓
	Rank of Magnitude of Effort	4
People	ITIL Training	✓
	Tool Training	✓
	Rank of Magnitude of Effort	2

The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-7. The ITIL implementation for Case G consisted of new processes, a new tool and new roles and position. The new process tools and roles required training to be conducted. Additionally, the tool and the processes need to be aligned.

The STS components of the university as displayed in the Leavitt Diamond were provided with focus according to the needs of the implementation. Additional effort was provided to the components that were affected the most. This includes the processes and the people components.
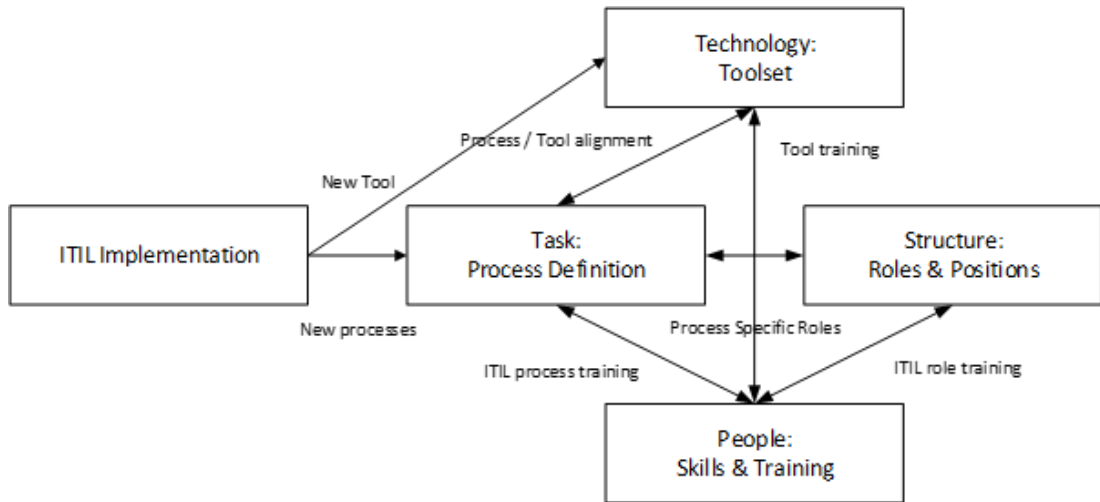
**Figure 4-7 Case Study G Relationship Between STS Components
in an ITIL Implementation**

Case G did not deliberately implement ITIL with an organisational change strategy
that included an STS approach. However, the university did address the STS
requirements of an organisation as depicted in the Leavitt Diamond. The university
implemented new processes and new technology. The new tool has been developed
in house and therefore received significant focus. Process has also been provided
with significant focus. However, the people component has received more focus than
the technology component. New roles have been created thereby adjusting the
structure of the organisation. This long, largely in house ITIL implementation has
provided the focus where it has been seen to be required. All components of the
organisation have been changed or adjusted in response to changes to other
components. Although Case G did not deliberately adopt a change management
strategy that included an STS approach it still did provide focus, as necessary, to the
four STS components. It could be considered therefore that Case G did implement
ITIL with an STS approach.

4.13 Case H

4.13.1   Organisational Overview

Case H is a section of a State Government Department. The section supports 94 staff each with a PC.

4.13.2   Pre-implementation ITSM

Prior to the ITIL implementation a number of processes had already been implemented. Change Management had been implemented and Incident Management was performed but it was largely ad-hoc. Change records were maintained in Lotus Notes and Configuration Items were maintained in a tool called Asset Navigator. Incident records were recorded in an MS Access database. The delivery was disjointed and with no central point of contact. Table 4-58 summarises the ITSM delivery that existed before the implementation of ITIL.

Table 4-58 Case Study H ITSM Status Before ITIL Implementation

ITSM delivery	Ad-hoc
Process and Function	Incident
	Change
	Configuration
Tool	MS Access databases
	Lotus Notes
	Asset Navigator

4.13.3   Drivers of Change

The department had identified that problems existed with the current delivery of IT services. The delivery was described as disjointed and that there was not a central point of contact or repository of records. Processes did not exist except for Change Management and records were maintained in an assortment of spreadsheets, tools and databases. Predominantly the delivery of ITSM was ad-hoc.

The ITIL implementation program was proposed by the Director of IT Customer Services. Management support for the program was not provided from executives above the Director of IT Services. The interviewee noted in regards to management

support for implementing ITIL that 'seniors didn't care, didn't know what it was' (H: 119). Leadership at senior management had no interest in the program. Table 4-59 summarises the drivers of the ITIL implementation change.

Table 4-59 Case Study H Drivers of Change Summary

Problems with existing ITSM	Management Support	Initiated by
Disjointed service	Support by the Director	The Director of IT Customer Services
No central point of contact or central record system	Above the Director – no support, no interest	

4.13.4   ITIL Implementation Success

The ITIL implementation project was described as successful and achieving expectations. Table 4-60 displays the results of the ITIL implementation success questions.

Table 4-60 Case Study H ITIL Implementation Success

Success Criteria	Result	Comment
Was the ITIL Implementation successful?	Yes	
Did the ITIL implementation achieve your expectations?	Yes	
Has the ITIL implementation resulted in:		
A more predictable infrastructure from improved rigour during system changes?	Yes	
Improved clarity in roles and responsibilities?	Yes	
Reduction in system and service outages?	No	Remains the same
Improved coordination between functional teams?	Yes	
Seamless end-to-end service?	Yes	
More documented and consistent ITSM processes across the organisation?	Yes	
Consistent logging of incidents?	Yes	
Enhanced productivity?	Yes	
Reduced costs?	Yes	
Improved customer satisfaction?	Yes	

4.13.5 The ITIL Project

4.13.5.1 Overview

The ITIL implementation program was initiated by the Director of the Customer Services section of the IT section. Support for the program was provided by the IT Director but not by Senior Management above the IT Director. Predominantly senior leadership neither supported nor opposed the program. The Senior Managers had no awareness of ITIL at the time of the proposal for the ITIL implementation. The Director of IT Customer Services acknowledged that the program was not well defined and that it mainly developed from one part to another. A project team as such was not created. An ITIL consultancy company was engaged to support the ITIL implementation. The ITIL implementation program commenced in 2006 and completed in October 2007.

4.13.5.2 Tool

The tool Alloy Navigator was selected for the implementation. The tool was selected and it was then determined how the processes would align with the tool. A significant level of customisation was made to the tool. The processes by this stage had been developed to some degree of maturity and the changes could then be applied to the tool to match the process requirements.

Issues

There were no identified difficulties encountered in the implementation of the tool.

4.13.5.3 Process

The processes implemented included Incident, Change, Configuration and Problem Management. Although implemented, Problem Management is not widely in use. Release Management was not implemented. The processes were initially basic versions and through iterations were adjusted to meet the needs of the department. Working groups were established to develop the ITIL processes. The processes were designed to meet the specific needs of the department and to conform to the requirements of the tool. A Service Desk was also implemented.

Issues

There were no identified difficulties with the implementation of the processes. The staff received training in ITIL and the tool and were comfortable with the requirements without any issues. It was a view that because the issues with the existing delivery were known and that the new processes rectified those issues that it was apparent to them that the implementation would provide benefit.

4.13.5.4 Organisational Structure

Significant changes to the organisation structure of the IT section were made. The creation of the Service Desk was identified as the largest change made to the organisation structure. Additionally, a dedicated Change Management team was established with a change coordinator. The Department IT section operates twenty four hours a day with the consequence that Incidents need to be managed through that period. The Service Desk and a rotation of Incident Managers comprised of senior staff fulfil the management of Incidents at all times.

Issues

The greatest difficulty identified during the implementation of new roles and the changes to the organisational structure was the bureaucracy of the Government human resource procedures. The requirements included new positions, role descriptions, position advertising and people recruiting. The protocols to be followed for the changes and recruitment created significant delays.

4.13.5.5 People

The staff in the IT section at the time of the implementation was already aware of the limitations of the existing service delivery. There was awareness that the delivery was disjointed and inconsistent from the perspective of the customer. The environment had become more complex over time and errors had occurred because it was becoming increasingly difficult to manage. The staff recognised that having formalised processes would close the gaps that existed in the delivery. Consequently the impact on staff was viewed as positive. Throughout the implementation there had been constant engagement with the staff including

providing information regarding the changes to be made and how it would affect them.

Training for the members of the IT section was multi-faceted. Targeted members of the team received ITIL training to Foundation Level. Other members of the IT section were provided with condensed ITIL training. These people were not as heavily involved in the process requirements as those who received Foundation level training. Members of the IT section were provided with training in the new tool set.

Issues

There were no perceived issues from the people aspect of the ITIL implementation.

4.13.5.6   ITIL Implementation Summary

Table 4-61 summarises the ITIL implementation project.

Table 4-61 Case Study H ITIL Implementation Summary

Project	Action	Performed
Implementation Duration	Start	2006
	End	October 2007
Tool	Existing	
	New	✓
	Purchased	✓
	In-House	
Processes Implemented	Service Desk	✓
	Incident Management	✓
	Change Management	✓
	Configuration Management	✓
	Service Level Management	
	Problem Management	✓
	Knowledge Management	
	Request Fulfilment	
	Service Catalogue Management	
	Release Management	
	Continual Service Improvement	
	Availability Management	
Organisation Structure	New Roles	✓
	New Positions	✓
	Adjustments	
People	ITIL Training	✓
	Tool Training	✓

4.13.5.7   ITIL Implementation Issues Summary

The only issue identified was the delays resulting from the bureaucracy involved with a Government department creating resource requirements. The departmental processes needed to be followed and the delays could not be overcome. Table 4-62 lists the issues identified and actions taken to resolve the issues.

Table 4-62 Case Study H ITIL Implementation Issues Summary

	Technology	Process	Organisation Structure	People
Issue	None encountered	None encountered	Bureaucracy, processes to follow	None encountered
Action to overcome	N/A	N/A	None taken	N/A

4.13.6 Organisational Change

4.13.6.1 Organisational Change Strategy

The ITIL implementation was the only change applicable to the IT section of the Government Department at the time. This was not part of any wider organisational change requirement. The processes were delivered with a phased approach. The processes and preparation were ready for deployment but there had been a delay in the preparation of the Service Desk. The Service Desk was consequently implemented separately.

The staff of the IT section did provide some input into the changes that occurred. The processes had been delegated to individuals who had responsibility for the identification of requirements.

The participants in the interview were unable to identify an organisational change strategy. In response to a direct question regarding use of a specific organisational change strategy, references were made to communication and new processes but an organisational change management strategy was not identified. The delivery of the implementation was managed a series of tasks to achieve the required goal. This was not performed with an organisational change management strategy model.

The Role of Staff in the Organisational Change Strategies

The staff did contribute to the organisational change with input and participation in planning sessions. Individuals were tasked with specific processes to support during the change. There is no indication from the interview response that the staff contributed to the determination of the organisational change strategies.

Reactive / Proactive

The ITIL implementation was a proactive change. There was a recognition that ITSM could be improved and that issues existed with the current delivery. There were not any stated significant events or circumstances causing the department to respond reactively.

Implementation Type

At the commencement of the project the department had limited processes and did not have a tool. The implementation of a tool and new processes would indicate that this was an application of a punctuated equilibrium model of change. The implementation of a tool and processes is a significant change amongst other normal incremental change that occurs.

The implementation of ITIL was conducted with a phased approach. The tool was purchased and prepared and the processes developed. The intention had been to conduct the change with a big bang approach but the determination was made to delay the service desk 'go live' and treat it as a separate phase. Consequently the big bang approach did not eventuate. The implementation was conducted in phases of tool and process followed by the Service Desk.

The change model applied was a transformation or radical change. The progression from no tool and limited processes was a significant change to the delivery. This is described as radical or transformational. The manner of delivery was transformed to the new model with a significant impact to the way in which services were provided. This is consistent with an approach to change such as punctuated equilibrium.

Organisational Change Approach

The department implemented ITIL with a Planned Change approach. The department has moved under a deliberate strategy from a limited ad hoc delivery of ITSM to a new delivery with a new tool, new processes and new roles. The department has moved to a new way of delivering IT services additionally the project was proposed by a senior leader and supported by management. Planned change is leadership driven. This deliberate approach to move from a current state to a desired state is representative of a planned change approach.

The organisational change type and approaches undertaken are summarised in Table 4-63.

Table 4-63 Case Study H Organisational Change Type & Approach Summary

Implementation Type	Performed
Incremental	
Punctuated Equilibrium	✓
Continuous	
Big bang	
Phased	✓
Revolutionary / Transformational	✓
Evolutionary	
Planned	✓
Emergent	

4.13.6.2   An STS Approach

The determination of the aspect of Leavitt's Diamond that received the most effort generated some discussion in the interview. The interview consisted of two participants from the Department with one identifying the tool as having the most effort and the other identifying process. The discussion resulted in an agreement that they had both received significant effort and that they would be equal first in terms of rankings. Process and tool were considered to receive much of the effort 'because there were a lot or processes built in ITIL. Because of the ones we were using, we had to document and detail it first before we could start massaging the tool set and the tool set after that. We spent a lot of time altering the tool set' (H: 449-453).

Considerable effort was involved in the creation of the processes but tool adaption to meet process requirements consumed significant effort. The management of Government processes to fulfil the organisational structure changes resulted in that aspect receiving the third most effort. The ranking of magnitude of effort applied to the four STS components is displayed in Table 4-64

Table 4-64 Case Study H STS Component Effort

Leavitt Diamond	Rank of Magnitude of Effort
Process	1
Tool	1
Organisational Structure	3
People	4

The relationship between the STS components is displayed in Table 4-65. The implementation of four new ITIL processes and the new purchased tool resulted in the equal greatest magnitude of effort. Changes to the organisational structure with new roles and new positions required the third greatest effort. People components required training for the new tool and for the new processes yet this component was accorded the lowest required effort.

Table 4-65 Case Study H Relationship Between STS Components

Process	# Processes Implemented	4
	Rank of Magnitude of Effort	1
Technology	Existing	
	New	✓
	Purchased	✓
	In-house	
	Rank of Magnitude of Effort	1
Organisational Structure	New Roles	✓
	New Positions	✓
	Adjustments	
	Rank of Magnitude of Effort	3
People	ITIL Training	✓
	Tool Training	✓
	Rank of Magnitude of Effort	4

The effects on the STS components of the Leavitt Diamond resulting from the implementation of ITIL are displayed in Figure 4-8. The implementation consisted of new processes and a new tool. This resulted in the requirement for training for staff for both process and tool. New roles and positions were created with the requirement that knowledge is provided to those staff to enable them to perform their roles.

The STS components of the organisation as displayed in the Leavitt Diamond were provided with focus according to the needs of the implementation. Additional effort was provided to the components that were affected the most. This includes the process and tool components.
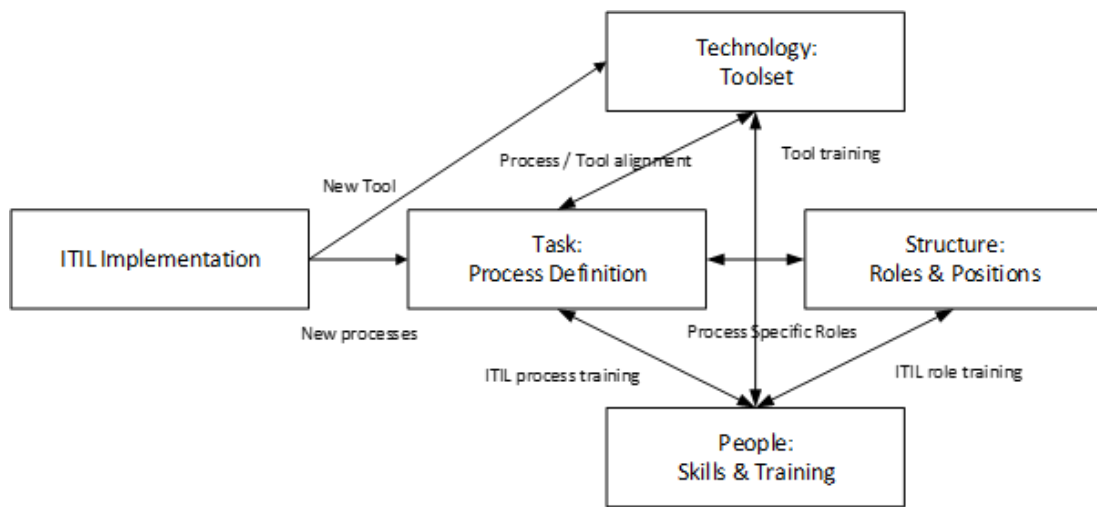
Figure 4-8 Case Study H Relationship Between STS Components in an ITIL Implementation

Case H did not deliberately implement ITIL with an organisational change strategy that included an STS approach. However, the department did address the STS requirements of an organisation as depicted in the Leavitt Diamond. Process and technology have been provided with significant focus. The technology component of the STS has received more focus than has the social part. However, changes to the structure of the organisation and new skills have seemingly addressed the needs of the social components. New roles have been created and training provided. The changes to the social component while being provided with less focus than the technical components have seemingly still been provided with sufficient focus for the needs of the organisation. Although Case H did not deliberately adopt a change management strategy that included an STS approach it still did provide focus, as

necessary, to the four STS components. It could be considered therefore that Case H did implement ITIL with an STS approach.

4.14 Cross-Case Analysis

This section contains the results of the cross-case analysis that compares and contrasts the findings from the individual cases. The cross-case analysis follows a similar structure as the within-case analyses. The cross-case analysis includes the organisation prior to the ITIL implementation, the drivers of the changes, the organisational change strategies and the STS approach to the changes.

4.14.1   Organisational Overview

The eight participating organisations represent a broad range of organisations by type and size. Three of the organisations are public commercial enterprises in the fields of energy, chemicals and finance. Included in the cases are three state public service departments or agencies and two universities. The organisations range in size but with inconsistent information regarding the size. The information provided in the interviews varies between an organisational wide view and an IT department view.

The organisational overview information for Cases B, C, D, E and G represents the whole organisation. The organisational overview information for Cases A, F and H represents the IT department of the organisation. Cases D, E and G provided information that includes both the organisation and IT department. The size of the organisation is reported inconsistently based upon an organisation wide headcount or PC count with some of the organisations provided whole of staff numbers and PCs with others just the IT department headcount and PCs. The size of the organisation in terms of scope of services is determinable to some extent based upon the information provided. Case A is a national company servicing clients and conducting operations in Australia. Cases B and C are global organisations servicing clients and conducting operations in multiple countries and regions. Cases D, F and H are state public service departments that provide services and conduct operations locally. Cases E and G are state based Universities that provide services and conduct operations locally and by distance.

The broad range of the organisations provides the opportunity to review a range of ITIL implementations in different circumstances. This provides valuable data relating to the organisational change strategies based upon different types and size of organisations. Table 4-66 presents a summary of the organisation that participated in the cases for the research.

Table 4-66 Organisational Overview

	Cases							
	A	B	C	D	E	F	G	H
Organisation Type	National Energy	Global Chemical	Global Financial	State Public Service	Local University	State Public Service	Local University	State Public Service
Organisation Size –by staff number		15,000	48,000	14,000	4,000	1,200	1,300	
IT staff number	100			31	120		60	
# PCs Supported	1,500 – 2,000	10,000	65,000	32,000	4,500	2,000	3,000	94

4.14.2   Pre-implementation ITSM

The participating organisations commenced their ITIL implementation from different ITSM capabilities as starting points. Only one organisation had an existing ITIL-based service delivery before the ITIL implementation. The other seven organisations varied from no existing application of the ITIL framework to limited, inconsistent or ad-hoc ITIL based services. All organisations had at least some capability to receive an Incident and respond. Case C had a mature level of ITSM that included multiple processes. The other organisations' ITSM included limited processes or in some cases no documented processes. Each of the organisations had an existing tool or database capability with which to record an ITSM Incident or a transaction or action.

Table 4-67 presents a summary of the status of the ITSM for the organisations before they commenced their ITIL implementations.

Table 4-67 ITSM Status Before ITIL Implementation

	ITSM Delivery	Process and Function	Tool
A	Informal	Service Desk Some Incident & Configuration Mgt	Infra MS Access databases
B	Inconsistent Varied globally Some ITIL in Australia and New Zealand (ANZ) Available but not applied elsewhere in the world	In ANZ only- Incident & Change Mgt Request Fulfilment for ordering PCs	In ANZ – Remedy Various tools in other regions
C	ITIL deployed 10 years earlier Processes & tool had not progressed Lacked maturity Performance poor	Incident, Problem, Service Level, Change, Configuration and Request Fulfilment	10 years old, heavily customised. Could not be upgraded Tool could not support expansion into Asia
D	Ad-hoc delivery	Service Desk and some ITIL processes	Existing unnamed tool
E	ITSM not implemented Calls taken Ad-hoc response to calls	Decentralised Service Desk Some ad-hoc Incident Mgt. No processes	Peregrine
F	Limited	Some processes, including Change Mgt Processes not followed Policy not enforced	Alloy Navigator
G	Limited	Incident Mgt Service Desk	HBO
H	Ad-hoc	Incident Change Configuration	MS Access databases Lotus Notes Asset Navigator

4.14.3   Drivers of Change

The eight organisations had a number of similarities regarding the drivers for their ITIL implementations. The primary exception was Case C. Case C implemented an ITIL program due to limitations with the existing tool and to update ITIL to meet current business requirements. The other seven organisations identified that significant issues existed with their current delivery of IT service management. The issues identified included poor processes, inconsistent processes and delivery, poor service and processes not managed. Five of the eight organisations identified issues that included not fulfilling business requirements or not being client focused.

The drivers of change are consistent with the existing ITSM delivery before the ITIL implementation displayed in Table 4-67. Table 4-67 shows that Case C was the only organisation that had an existing mature ITSM prior to the program to implement ITIL. Table 4-68 summarises the problems identified as existing with the ITSM delivery.

Table 4-68 Drivers of Change

	Problems with existing ITSM	Management Support	Initiated by
A	Not a central repository for ITIL processes Inefficient management of Incidents and calls Not meeting the requirement of SAP support	Initially no Support for outcomes but not for funding	Senior Manager of IT
B	Multiple tools and multiples different processes depending upon global region No consistent delivery globally Not aligned with business needs	Yes	The Chief Information Officer
C	10 years old tool heavily customised and could not be upgraded. Could not support requirements for growth ITSM had not kept pace with business changes	Yes	General Manager of Technology Service Management
D	ITIL processes implemented ad-hoc across multiple agencies Inconsistent delivery	Yes	The Director of the IT Division
E	Incidents not managed Inconsistent views by customers of service	Unknown	Unknown
F	Processes were poor Processes not being followed Policy not enforced	Unknown	Chief Information Officer
G	No ITIL processes implemented Changes causing service disruption Lack of client focus	Immediate leader support – Yes Board – No initially	The Manager of the Data Centre and Support Teams
H	Disjointed service No central point of contact or central record system	Support by the Director of IT Customer Services Above the Director – no support, no interest	The Director of IT Customer Services

As shown in Table 4-68, management support was provided for five of the ITIL implementations at the commencement of the projects. Case A commenced without senior management support but this changed during the implementation. Two of the participants in the research, Cases E and F, were unable to state if the ITIL

implementations commenced with senior leader support. Case E was unable to identify the leader driving the change. Table 4-68 displays the support provided by management and the role of the leader that initiated the program.

4.14.4   ITIL Implementation Success

All eight organisations considered that the ITIL implementation was successful. The success or failure of the ITIL implementation was not known prior to the time of the engagement with the organisations that participated in the research. However, not all organisations held the view that the ITIL implementation had achieved their expectations. Case A acknowledged that they may have set their expectations too high. Case C partially achieved their expectations recognising that there was a requirement for improvements to some processes. Case F did not state if the ITIL implementation had achieved their expectations. In terms of the ten success criteria, results were quite consistent across the organisations with the exception of improvements to seamless end to end service. Cases B, F and H identified that the ITIL implementation provided a seamless end to end service. Case C stated that a seamless end to end service was not provided whereas Cases D, E and G responded that there was a partial success for this requirement. Case A could not be clear if seamless end to end service was being provided as they had no measure for it. Although none of the organisations identified a measure for achieving a seamless end to end service Case A was the only organisation to respond that an answer could not be provided because no measure was available. Table 4-69 summarises the ITIL implementation success for the organisations. The result of the organisation's ITIL implementations does not display any patterns or commonalties in regards to the organisation size, industry or type. The organisations were not all successful for each criterion of success. However, success overall was considered to be obtained even if there were some instances of not achieving success for some criteria.

A numerical score to depict the success of the ITIL implementation was determined based upon the ten criteria listed in Table 4-69. The ten criteria measured responses to the question 'Has the ITIL implementation resulted in ….'. The responses provided by the participants have been accorded a numerical value. The participants were asked the questions relating to the success of the ITIL implementation with answers provided on a five point Likert scale to indicate successful, unsuccessful,

partially successful, the outcome is not clear, or that it was not measured. The scores accorded are 0 for not successful, 1 for partially successful and 2 for successful. The answers that the success was not clear or that the criteria was not measured were not provided a score and the result left blank and excluded. The scores were tallied and averaged for each organisation. The results are displayed in Table 4-69 in the last row labelled 'Average Score'. Each organisation considered that the ITIL implementation was a success. Based upon an average of the allotted scores a ranking for success has been determined. The maximum average score achievable is 2 identifying that each criterion measured was successful. A score of less than 1 indicates that the majority of the measured criteria were not achieved and therefore not successful. Cases B and F recorded average scores of 2. Case D scored an average of 1.9 and Cases A, C, G, and H scored 1.8. Case E scored an average of 1.7. Case F did not provide a response in the interview whether the ITIL implementation had achieved expectations and yet each criterion was recorded as being achieved.

The outcome of the grading by average of the success criteria is consistent with the answers by the participants that their ITIL implementations were successful. An average greater than 1 indicates that more criteria were deemed to have been achieved than not achieved. Each organisation achieved scores of 1.7 or above indicating that they were not only successful according to the criteria but at the higher end of the average range.

Table 4-69 ITIL Implementation Success

		A		B		C		D		E		F		G		H	
		Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score
Was the ITIL Implementation successful?		Y		Y		Y		Y		Y		Y		Y		Y	
Did the ITIL implementation achieve your expectations?		N		Y		P		Y		Y		NS		Y		Y	
Has the ITIL implementation resulted in:	A more predictable infrastructure from improved rigour during system changes	Y	2	U	-	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
	Improved clarity in roles and responsibilities	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
	Reduction in system and service outages	Y	2	U	-	Y	2	Y	2	Y	2	Y	2	Y	2	N	0
	Improved coordination between functional teams	Y	2	U	-	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
	Seamless end-to-end service	U	-	Y	2	N	0	P	1	P	1	Y	2	P	1	Y	2

	A		B		C		D		E		F		G		H	
	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score	Response	Score
More documented and consistent ITSM processes across the organisation	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
Consistent logging of incidents	P	1	Y	2	Y	2	Y	2	Y	2	Y	2	P	1	Y	2
Enhanced productivity	Y	2	U	-	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
Reduced costs	NM	-	Y	2	Y	2	Y	2	N	0	Y	2	Y	2	Y	2
Improved customer satisfaction	P	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2	Y	2
Average score		1.8		2		1.8		1.9		1.7		2		1.8		1.8

Abbreviations; Y=Yes, N = No, P = Partial, U = Unclear, NM = Not Measured, NS = Not Stated

The success of the ITIL implementations is summarised in Table 4-70. The table displays the results for each criteria achieved by the organisations by volume.

Table 4-70 Measures of Success of the ITIL Implementations

Criteria for Success	Number of Organisations				
	Yes	No	Partial	Unclear	Not Measured
More predictable infrastructure from improved rigour during system changes	7			1	
Improved clarity in roles and responsibilities	8				
Reduction in system and service outages	6	1		1	
Improved coordination between functional teams	7			1	
Seamless end-to-end service	3	1	3	1	
More documented and consistent ITSM processes across the organisation	8				
Consistent logging of incidents	6		2		
Enhanced productivity	7			1	
Reduced costs	6	1			1
Improved customer satisfaction	7		1		

Four of the ten criteria for success were identified as achieved or partially achieved by the eight organisations. Three of the criteria were recorded as successful or partially successful by seven of the organisations. The final three criteria were successfully or partially successfully achieved by six of the organisations. Each criteria with the exception of seamless end-to-end service was considered achieved by six or more of the organisations. However, seamless end-to-end service was achieved by three organisations and partially achieved by three of the organisations. Of criteria measured or a result understood only three criteria were considered not to have been achieved by all organisations.

4.14.5   ITIL Implementation Project

The characteristics of the ITIL implementations projects vary across the organisations. The implementations for five of the eight organisations were completed in approximately two years or less. The implementation for Case D was not complete at the time of the interviews but was estimated to have a four year

duration. Cases E and G commenced in 2006 and 2004 respectively and are considered to be ongoing. A date for completion had not been set for these two organisations.

A new tool to support ITIL was implemented in five of the organisations. The new tool was purchased by four of the organisations with just one organisation developing a new tool in house. The existing tool was utilised by three of the organisations.

There was some similarity in the scope of the ITIL implementation in regards to the processes and functions implemented. Each organisation implemented Service Desk, Incident and Change Management and seven organisations implemented Problem Management. Six organisations implemented Service Level Management and five implemented Configuration Management. Other processes implemented included Knowledge Management and Request Fulfilment by four organisations and Service Catalogue Management by three organisations. Release and Availability Management and Continual Service Improvement (CSI) were implemented by two organisations. The interviewees were not asked questions specific to ITIL version or ITIL phase and descriptions by the interviewees of the ITIL implementations did not refer to version or phase. The implementations of ITIL did include however, three processes from the Design phase, three from Transition, two from Operations and CSI. No organisation stated an implementation of a process from the Service Strategy phase. Determining how the ITIL services will be delivered, as each organisation demonstrated, is in fact an ITIL Service Strategy. Figure 4-9 presents the ITIL processes and functions implemented by the organisations.
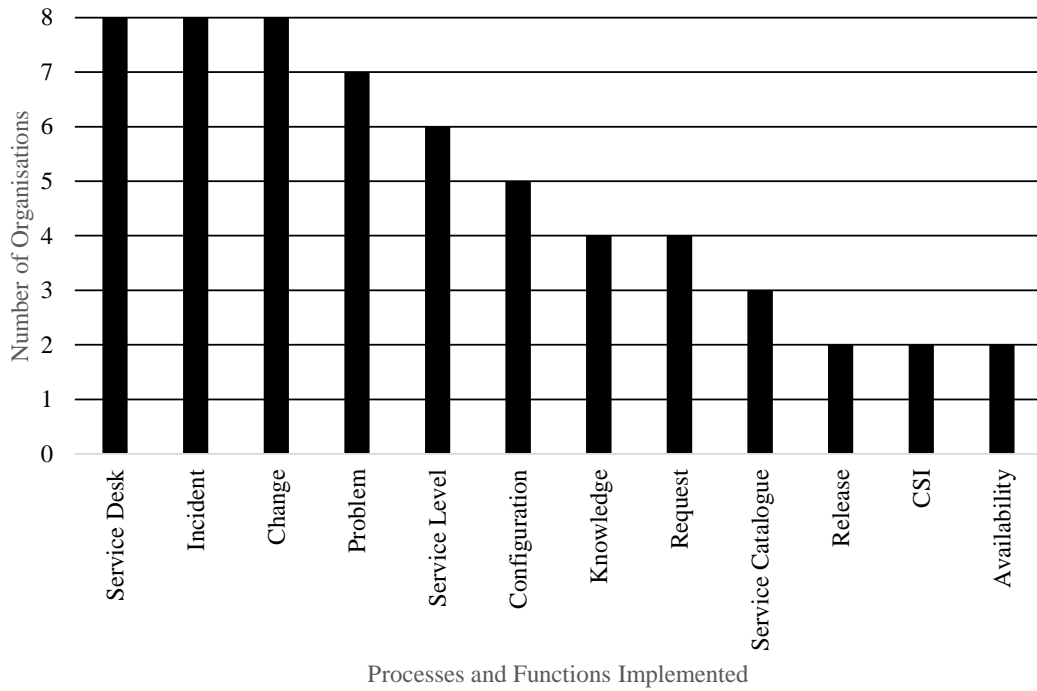
Figure 4-9 ITIL Processes and Functions Implemented

Cases D did not make any changes to the organisation structure whereas each of the other organisations implemented new roles. Case A implemented new roles but used existing staff. The other six organisations that implemented new roles created new positions. Cases E and G subsequently made adjustments to their organisation during the implementation of ITIL project.

Each organisation provided training in ITIL processes. Tool training was provided for only five organisations. The tool training was consistent with the deployment of new tools. Only the organisations that deployed a new tool provided tool training. The organisations that continued to use an existing tool did not provide tool training. Table 4-71 presents a summary of the scope of the ITIL implementation for each organisation.

Table 4-71 Summary of ITIL Implementation Projects

		A	B	C	D	E	F	G	H
Duration of ITIL Implementation Project	Start	Late 2007	May 2012	Late 2010	Nov. 2011	2006	June 2013	2004	2006
	End	Late 2008	June 2013	Est. Late 2014	End 2012	Ongoing	Est. June 2015	Ongoing	October 2007
Tool	Existing	✓			✓		✓		
	New		✓	✓		✓		✓	✓
	Purchased		✓	✓		✓			✓
	In-house							✓	
Processes Implemented	Service Desk	✓	✓	✓	✓	✓	✓	✓	✓
	Incident	✓	✓	✓	✓	✓	✓	✓	✓
	Change	✓	✓	✓	✓	✓	✓	✓	✓
	Configuration	✓		✓			✓	✓	✓
	Service Level	✓	✓	✓	✓		✓	✓	
	Problem	✓		✓	✓	✓	✓	✓	✓
	Knowledge	✓	✓	✓		✓			
	Request		✓	✓	✓			✓	
	Service Catalogue		✓	✓	✓				
	Release			✓			✓		
	CSI	✓		✓					
	Availability	✓		✓					

		A	B	C	D	E	F	G	H
Org. Structure	New Roles	✓	✓	✓		✓	✓	✓	✓
	New Positions		✓	✓		✓	✓	✓	✓
	Adjustments					✓		✓	
People	ITIL training	✓	✓	✓	✓	✓	✓	✓	✓
	Tool training		✓	✓		✓		✓	✓

4.14.6   Issues Encountered

Although the ITIL implementations were considered successful, issues were encountered. The primary issues encountered by organisations relate to resistance to change and other people concerns. The interviewees were asked for each STS component the issues encountered. People related issues were consistently raised in respect of STS components other than just the people component. The results have been recorded in association with the STS component with which the issue was raised. For example, Case A raised people related issues with each STS component, not just the people component. Consequently resistance to change associated with the process STS component has been identified by the interviewee and displayed with the process issues. This serves to better identify where the issue was encountered rather than just group as people issues. Table 4-72 displays the issues encountered and the actions taken to overcome them. The table states the issues in association with the STS components as identified by the interviewees.

Resistance to the ITIL implementation by IT staff was identified as an issue in regards to process change for Cases A, E and G. Cases A and G also identified resistance by IT staff in respect to the technology changes. Case G encountered resistance in the people component changes. Case F encountered a minor issue with resistance by staff of new roles relating to the organisation structure changes as well as concern with the new roles in regards to people components. Case E identified as well issues with the acceptance of the new processes by IT staff and a dislike by the IT staff for the ITIL training that was provided. Case F identified an issue with the salary paid to people that were now performing new roles. Case A identified that their staff did not have the experience necessary for the new roles and Case B recognised that they had a lack of ITIL knowledge within their organisation. Case G had issues with the availability of staff for the new roles.

The Public Service Cases E and H both encountered issues that included bureaucracy resulting in delays or lengthy processes. The issues affected the acquisition of technology for Case E and the changes to the organisation structure for Case H. Trends or themes with other issues affecting the implementation of ITIL are not apparent.

In response to the issues identified across the organisations in regards to various people related issues, common actions taken include training of staff and focussing on the benefits the clients will receive. Case A conducted training in the technology and new roles in the organisational structure to overcome people related issues. Case G provided training to overcome a lack of acceptance of the new processes and other resistance. Cases A and E focussed on the benefits the clients would receive to overcome resistance to the new processes.

Case D stated that they did not encounter any issues with the ITIL implementation. Despite the number of issues identified that are people related four organisations identified that they had no issues with the people component that consisted of providing training and developing skills. Technology is a major component of the ITIL implementation although three of the organisations maintained their existing system. Of the five organisations that implemented a new tool, Cases B, D, F and H identified no issues and Case E was affected only by bureaucratic delays.

Table 4-72 presents the issues encountered and the actions taken to overcome the issues. The summary categorises the issues according to the STS components

Table 4-72 Issues Encountered

| Case | Issue and Action | STS Component | | | |
		Process	Technology	Organisation Structure	People
A	Issue	Resistance by IT staff IT staff set in ways in working	Licensing restrictions Resistance by IT staff	Lack of experience in roles Multiple process owners for each process	Additional work for staff
	Action to overcome	Display senior management commitment Focus on benefit to clients	Licences obtained	Training of staff in new roles	Emphasising benefits to come once implemented
B	Issue	Lack of knowledge in the organisation Agreement on process priorities	None stated	Short time frame Complexity of multiple roles in multiple countries	Minor - Salary
	Action to overcome	Build skills in the organisation – training Demonstrate benefits of required processes		None stated	None stated
C	Issue	None encountered	Standardising operations in 32 countries Short time frame Resistance to change	None encountered	None encountered
	Action to overcome	N/A	High executive support paved the way forward Training in ITIL and tool	N/A	N/A
D	Issue	None encountered	None encountered	None encountered	None encountered
	Action to	N/A	N/A	N/A	N/A

Case	Issue and Action	STS Component			
		Process	Technology	Organisation Structure	People
	overcome				
E	Issue	Resistance by IT staff	Internal funding delays	None encountered	Nature of ITIL training – disliked by some staff Resistance to change
	Action to overcome	Focus on benefit to clients Demonstrate benefits to be obtained	No specific action	N/A	None taken Change accepted over time
F	Issue	Lack of defined services with client – affecting SLM	None Encountered	Minor - Resistance to new roles	Impact of the change
	Action to overcome	Incomplete and ongoing Action not stated	N/A	No action stated	Communication / mentoring
G	Issue	Resistance by IT staff	Initial lack of support for a new tool Resistance by IT staff	None encountered	Some resistance
	Action to overcome	Training, information	Implement close to a like for like old system and maintain improvements over time Demonstrate ease of use to gain acceptance	N/A	Training and providing information
H	Issue	None encountered	None encountered	Bureaucracy, processes to follow	None encountered
	Action to overcome	N/A	N/A	None taken	N/A

4.14.7 Organisational Change

4.14.7.1 Organisational Change Strategy

Each organisation was asked if an organisational change strategy was applied to the ITIL implementation. Cases A and B responded that they referred to the organisational change model of John Kotter however they did not apply it as a strategy. Each other organisation responded that they did not apply an organisational change strategy of any recognised model. The responses therefore identified that although the ITIL implementation affected organisational change none of the organisations applied a specific organisational change model. Table 4-73 summarises the responses to the organisational change model applied to the ITIL implementation.

Table 4-73 Organisational Change Strategy

				Case			
A	B	C	D	E	F	G	H
Referred to Kotter	Referred to Kotter	No strategy applied	No strategy applied	No strategy applied	No strategy applied	No strategy applied	No strategy applied
No strategy applied	No strategy applied						

4.14.7.2 Staff Contribution to Organisational Change Strategies

The participants were asked if staff were involved in the determination of organisational change strategies. This question was intended to produce data that could be related to the organisational change strategies adopted and the focus on the social aspects of the organisation. However, the primary trend identified from the cross case analysis was that most of the organisations did not involve staff at all in determining the change strategy. Cases A, C, D, F either did not include staff or provided a less specific response indicating that staff were not involved. Case B involved staff in the strategy session and workshops but the staff were on trial for positions that they had been targeted for. The staff in Cases E, G and H contributed with some input into the changes applied but it is unclear if they influenced the determination of the organisational change strategies. Table 4-74 presents the results

of the interviews in regards to the contribution by staff to the organisational change strategies.

Table 4-74 Contribution by Staff to the Organisational Change Strategies

Organisation	Contribution to Strategy
A	No indication that staff contributed to organisational change strategies
B	Selected staff conducted strategy sessions and workshops to progress the organisational change requirements. The selected staff were unknowingly on trial for roles in the new organisation structure
C	The staff had no involvement in the determination of organisational change strategies
D	The staff had no involvement in the determination of organisational change strategies
E	There was some consultation with staff in regards to the organisational change strategies. Staff did provide some input but it is unclear if they were involved in the determination of the organisational change strategies
F	No indication that staff contributed to organisational change strategies
G	Staff was consulted in regards to organisational change strategies. Although not clearly stated it is indicated that the staff do have a role in the determination of organisational change strategies
H	Staff did provide input in organisational change strategy workshops but there is no indication they contributed to the determination of the organisational change strategies.

4.14.7.3   Reactive or Proactive Change

Each organisation implemented ITIL as proactive change. The recognition existed that there was a need to improve services or to upgrade the tool used for supporting ITSM. The opportunity existed to plan for the change. None of the organisations identified a specific event or requirement that caused them to identify the need for change. These are proactive change indicators. Case C already had a mature ITIL delivery that required updating but was limited in expansion capabilities until a new tool could be implemented. Table 4-75 displays the organisational change requirements as reactive or proactive.

Table 4-75 Organisational Change Type and Approach Summary

	Case							
	A	B	C	D	E	F	G	H
Incremental								
Punctuated Equilibrium	✓	✓	✓	✓	✓	✓	✓	✓
Continuous								
Big bang								
Phased	✓	✓	✓	✓	✓	✓	✓	✓
Revolutionary / Transformational	✓	✓		✓	✓	✓	✓	✓
Evolutionary			✓					
Planned	✓	✓	✓	✓	✓	✓	✓	✓
Emergent								
Reactive								
Proactive	✓	✓	✓	✓	✓	✓	✓	✓
STS Approach	✓	✓	✓	✓	✓	✓	✓	✓

4.14.7.4 Implementation Type and Approach Implementation Type

The organisations conducted their organisational change applying various strategies and as different types of organisational change. It has already been identified that the organisations did not apply a specific organisational change strategy. Nevertheless, the organisations each performed an organisational change by implementing ITIL. The questions asked in the interview did not deliberately state the various types and approaches to organisational change. Rather, the information was obtained through questions about the project and how it was implemented.

Each of the eight organisations implemented ITIL as a punctuated equilibrium model of change. The responses identified by the organisations were that the ITIL implementation was not part of a wider plan for change. The ITIL implementations were a significant change in environments where changes were normally smaller and incremental. Cases E and G conducted ITIL implementations over lengthy time periods. Each considered their ITIL implementation to be ongoing despite progressing since 2006 and 2004 respectively. The implementation of ITIL for Cases E and G could be further considered to be conducting ongoing change as incremental change after the initial period of process, tool and role implementations.

The eight Cases conducted the ITIL implementations with a phased approach rather than using a big bang approach.

A revolutionary, or transformational, approach to change has been applied by seven of the eight organisations. Case C is the only organisation that applied an evolutionary approach. Table 4-67 presents the state of ITSM services at the organisations before the ITIL implementation programs. Each of the organisations, with the exception of Case C, identified their ITSM delivery as informal, limited, ad-hoc, not implemented or inconsistent. A revolutionary change approach requires a total change in the organisation affecting its culture and the way in which it operates (Reger et al. 1994). This is applicable to the organisations with the exception of Case C. Case C identified that the organisation already had a mature ITIL delivery in place. Case C had been delivering an ITIL based IT Service Management for ten years before the recent ITIL implementation. The organisation was already accustomed to a delivery of ITIL processes, the service desk contact point and the tool for recording transactions and records. The ITIL implementation of Case C included a new tool, new processes and new roles but due to the existing ITIL delivery this was less an impact when related to organisations that previously had no ITIL ITSM delivery. The new processes were upgrades and the new tool a replacement for an existing tool. The staff delivering the services had already been delivering ITIL services for ten years. The project to implement ITIL for Case C was a progression of an existing ITIL delivery to an improved ITIL delivery. The ITIL services of Case C had evolved rather than transformed. Table 4-75 displays a summary of the organisational change types and approaches applied.

4.14.7.5   Organisational Change Approach

Each of the organisations conducted their ITIL implementation change with a planned change approach. The organisations all had deliberately established a plan to move the organisation from the way it delivered IT services to a new way of delivering IT services. The changes were known to be supported by management with the exceptions of Cases E and F. The management support for the two organisations was not known. Case A commenced the program without management support but this was ultimately provided. The change programs undertaken by all the organisations were formal and proactive indicating planned change.

The organisations deliberately established programs to implement ITIL or to improve upon the existing ITIL delivery. Table 4-75 displays the summary of the organisational change approach adopted.

4.14.7.6 Leavitt Diamond Balance & the Relationship Between STS Components

Based upon the fourth series of questions in the in-depth interviews the ITIL implementation project, including the processes implemented, the tool requirements, the organisational structure changes and the people requirements applied is documented in §4.14.5. §4.14.5 includes Figure 4-9, the processes and functions implemented by each organisation and Table 4-71, a summary of the ITIL implementation project by STS component. §4.14.6 documents the issues encountered by STS components. Relationships between STS components have been identified based upon the content of §4.14.5 and §4.14.6. The relationship is based upon a change to one STS component requiring a change to another STS component.

Each organisation implemented new processes and each organisation provided training (people STS component) in the new processes. Five of the eight organisations implemented new tools and three used existing tools. Each organisation that implemented a new tool provided training (people STS component) in the new tool. Each organisation was required to adjust tool or process to align them for functionality. Seven of the eight organisations created new roles (organisation structure STS component) to manage the processes. The eighth organisation did not identify if new roles were created. New roles require training to meet the skill requirements. The people STS component reacting to the requirement of skills for tool and process as well as new roles provided training. No organisation recognised that the requirement for a new or existing tool affected the organisation structure STS component. Although it could be considered that the technology required supporting and that new roles would be required this did not become evident through the interviews. A relationship therefore between tool and organisation structure has not been included. Table 4-76 presents the STS components, the change that has occurred and the affected STS component and the reaction. For each change there has been an interaction with another STS component.

Table 4-76 Summary of STS Component Relationships

STS Component and Change		Affected STS Component and Reaction	
STS Component Changed	Activity / Change	Affected STS Component	Reaction
Process	New processes	People	Training in new processes
Process	New processes	Organisation structure	New roles
Process	Alignment with tool	Tool	Tool adjusted
Tool	Alignment with process	Process	Process adjusted
Tool	New tool	People	Training in new tool
Organisation structure	New roles	People	Training new roles in processes
People	New skills	Process	Training in process
People	New skills	Tool	Training in tool
People	New skills	Organisation structure	Training new roles in processes

Relationships between STS components were also identified in regards to issues encountered. It could be considered that actions to address issues affecting an STS component within the ITIL implementation are reactions to maintain the balance of the Leavitt Diamond. Not all issues were addressed with the interaction of other STS components. Predominantly the people STS component was called into interaction with other STS components in the event of issues. Issues involving people matters were identified in the STS components of tool, process and organisational structure. Primarily the issues involved resistance by staff to change, including new or changed tools and new processes, and new roles. The reactions by the STS component to the issues included training. Resistance to change was identified also as a people STS component issue although it was addressed without interaction with other STS components. Table 4-77 displays the issues by STS component and the STS component affected. This table presents the relationships that exist between STS components for the resolution of issues.

Table 4-77 Summary of STS Components and Issues

STS Component and Issue		Affected STS Component and Reaction	
STS Component with Issue	Issue	Affected STS Component	Reaction
Process	Resistance	People	Support for staff
Process	Lack of knowledge	People	Training
Tool	Resistance	People	Training
Organisation structure	Lack of experience	People	Training
People	Resistance, dislike of process	Process	None

The research also sought to identify the requirements to balance the Leavitt Diamond. The requirement for the balancing of the Leavitt Diamond was based upon two theories. One theory stated that a change to one STS component will require changes to other STS components (El Sawy 2001). The second and more specific theory was that for an STS approach to organisational change, the social and technical components are to be provided with equal focus (Bostrom & Heinen 1977). To identify if effort was applied to the STS components and the order of effort the organisations were asked to rank in order the effort provided to the four STS components of the organisation. The answers were provided with 1 as the most effort to 4 as the least effort. Some responders answered with duplicate components having the same rank and therefore the same effort applied. Table 4-78 displays the ranking of magnitude of effort applied for the STS components. The ranking for each component has been averaged and displayed in Table 4-78.

The result of the average ranking shows that the most effort was applied to the people component followed by process. Effort for the tool followed process with organisation structure having the least effort applied. People and process scored 1.6 and 1.8 respectively. In a socio-technical system the greatest effort has been applied to a social component, people, followed by a technical component, process. ITIL is a process based framework so it could be expected that it would require considerable focus. Process and people were each identified by effort applied as either first or second for seven of the eight organisations. All eight organisations identified organisation structure as the third or fourth least effort applied. Organisation structure was consistently the component that had been applied the least effort.

Tool was identified as the most effort by two organisations and as the least effort by one organisation. The gap between process and people followed by tool and organisational structure is noteworthy. The cross case analysis shows that the organisations placed substantial focus on people and process just as they placed the lesser focus on tool and organisation structure.

Table 4-78 Ranking of Magnitude of Effort for the STS Components

STS Component	A	B	C	D	E	F	G	H	Average Ranking
					Cases				
People	1	2	1	1	1	1	2	4	1.6
Process	2	3	2	1	2	2	1	1	1.8
Tool	3	1	3	3	3	4	3	1	2.6
Organisational Structure	4	3	4	3	4	3	4	3	3.5

The relationship between the STS components can be examined in regards to the ITIL implementation. This examination reviews the impact on the effort according to the changes made to the components. The intention is to consider if the ranking of effort is influenced by the extent of the changes applied. The STS component of processes was provided with a ranking of most effort by three of the organisations and second by four of the organisations. The number of processes implemented ranged from four to eleven. Case A provided the most effort to process while implementing four processes. Case C ranked process second for effort yet implemented eleven processes. Case B ranked process third only, the lowest ranking for any organisation in regards to process, and implemented six processes. Case B implemented two more processes than Case H. However, Case H ranked process higher than other components indicating that the proportion of effort does not appear to be dependent upon the number of processes implemented.

Technology was ranked the most effort by Cases B and H. No organisation ranked technology second and five organisations ranked it third with Case F ranking it least. Cases B and H implemented a new purchased tool and provided a most effort ranking. Cases C and E also implemented a new purchased tool and provided a third only ranking. Third ranking for implementing a new purchased tool by Cases C and

E is the same ranking provided by Cases A and D for using an existing tool. Case G had developed their tool in house and yet still provided only a ranking of third in terms of effort. The ranking by Case G for developing an in house tool is the same as the ranking provided by Cases A, D and F for not changing the tool and Case C for implementing a new purchased tool. The rankings provided when comparing the technology component do not provide a view that certain types of tool changes require more effort than others.

Organisation structure was consistently recognised as being provided with the least or the second least effort. Case D did not make changes to the organisation structure. New roles or positions were not created. However a ranking of third was provided. Case D provided shared effort rankings consequently a ranking of third was the least effort provided. Four organisations reported organisation structure drew the least effort regardless of whether the change included new roles with positions or only new roles. The organisations that ranked the organisation structure component as third, with the exception of Case D, all implemented new roles and positions. Organisation structure was consistently provided with a low ranking in effort. This ranking seemingly is not dependent upon whether the ITIL implementation required new roles and positions or new roles only.

The people component was ranked first for effort by five organisations and second by two organisations. Case H identified people as being provided with the least effort of the ITIL implementation program. Every organisation provided ITIL training. Cases B, C, E and G provided training in ITIL and the tool and ranked effort as first or second. Case H provided training in ITIL and tool and ranked the people component as the least effort provided. It is clear that the organisations placed significant focus on the people component and provided training considered appropriate to the needs of the program. Case H communicated constantly with the staff and advised that there were no issues identified.

Table 4-79 displays a summary of the ITIL implementation program for each organisation aligned with the ranking given for effort.

Table 4-79 Relationship Between STS Components

Case	Process		Technology					Organisation Structure				People		
	# Implemented	Effort Ranking	Existing	New	Purchased	In-house	Effort Ranking	New Roles	New Positions	Adjustments	Effort Ranking	ITIL Training	Tool Training	Effort Ranking
A	8	2	✓				3	✓			4	✓		1
B	6	3		✓	✓		1	✓	✓		3	✓	✓	2
C	11	2		✓	✓		3	✓	✓		4	✓	✓	1
D	6	1	✓				3				3	✓		1
E	4	2		✓	✓		3	✓	✓	✓	4	✓	✓	1
F	6	2	✓				4	✓	✓		3	✓		1
G	6	1		✓		✓	3	✓	✓	✓	4	✓	✓	2
H	4	1		✓	✓		1	✓	✓		3	✓	✓	4
Average Ranking		1.8					2.6				3.5			1.6

4.15 Chapter Summary

Chapter 4 discussed the results of the within-case and cross-case analyses of the data collected from the eight organisations that participated in this research. The transcripts of the interviews were analysed and considered in regards to the primary requirements of the research. The data were grouped and analysed. The analysis reported overviews of the organisations and the drivers of change. The success criteria of the ITIL implementation project were examined and the ITIL implementation project itself was examined. Issues encountered were identified and examined. The organisational change strategies, including a focus on the STS approach, applied by the participating organisations were reviewed and considered in regards to balance of the Leavitt Diamond.

Chapter 5 will consider the findings drawn from the analysis documented in this chapter and reviewed in conjunction with literature presented in Chapter 2.

5 Findings

5.1 Introduction

This chapter summarises and interprets the data presented in Chapter 4 and considers the findings in association with the research problem and research questions. The preceding chapters described the problem, reviewed the literature; then identified the method of data collection. Chapter 4 described the case study research and analysed the data collected from the eight participating organisations. The chapter also contained the cross-case analysis in which analysed data from the individual cases was compared and examined for contrasts.

In this chapter, findings are discussed and considered in regards to the overarching question and four research questions:

What organisational change strategies are organisations employing to successfully implement an ITIL-based ITSM?

RQ1. What organisational change management strategies do organisations use to implement ITIL?

RQ2. How does a socio-technical approach to the implementation of ITIL influence the success?

RQ3. What organisational change factors determine success or failure of an ITIL implementation strategy?

RQ4. How does Leavitt's Diamond identify the relationships between socio-technical components during implementation of ITIL?

5.2 Organisational Change Management Strategies

This section presents and discusses the findings to answer the first research question:

RQ1. What organisational change management strategies do organisations use to implement ITIL?

The findings are based upon the case study analysis and cross-case analysis. The question will be answered according to the change management strategies

applied and the change management types and approaches that were used by the organisations to implement ITIL and improve the organisation's ITSM. In considering the organisational change strategies adopted by the organisations, it is noted that none of the organisations deliberately or consciously selected an organisational change strategy or an STS approach. It is with this recognition that the findings are presented.

5.2.1 Drivers of Change

The drivers of change are important to the change management strategy applied to the implementation of the ITIL framework. The drivers of change include the reasons for change and the support provided for the change to occur. The summary of the cross case analysis (Table 4-68) lists the reasons for the implementation of the ITIL processes, the support provided by management and the initiator of the change. With the exception of Case C the organisations defined issues with the management of their IT services. The existing ITSM was not consistent, not aligned to business needs or was of a poor quality. Case C had implemented ITIL processes approximately ten years earlier but now had a requirement to improve the ITSM further and to upgrade the tool that supports the processes.

Support for the implementation of ITIL was provided by management initially for five of the organisations. One organisation was not initially provided with management support but this was later provided. Two of the organisations were unable to state if management support was provided.

None of the organisations identified a requirement for the implementation of ITIL processes based on a reaction to a specific issue that compelled change. The organisations implemented ITIL processes in order to address the issues that they had identified with ITSM.

The literature review identified that organisations change as a result of because of ongoing development and adaption with an expectation of improved organisational performance (Linstead et al. 2004). Consistent with the literature review, the organisations that participated in the research are adapting to changing requirements for delivering IT services and addressing requirements to improve services.

5.2.2 Type of Change

Each of the eight organisations implemented ITIL as proactive change rather than reactive change. The proactive nature of the change for all organisations was to address the identified issues with the IT Service Management services. This requirement was not in reaction to an identified issue forcing change to occur. The drivers for the ITIL implementation are based upon the status of the existing IT Service Management. Each of the eight organisations identified issues with their existing IT Service Management delivery. Although Case C had existing ITSM processes based on ITIL guidelines, issues were identified with the services. Common issues amongst the organisations included poorly managed and delivered processes not meeting business needs or failure to focus on the clients.

5.2.3 Implementation Strategy

Each of the eight organisations implemented ITIL with a phased approach. This identifies that the organisations had chosen to not implement all processes and tools simultaneously as a big bang approach. This finding is consistent with earlier research on ERP implementations but different to BPR implementations. A 2006-2007 survey of companies that implemented ERP found that almost all of the 93 participants applied a phased approach. The view was that this reduced risk (Al-Turki 2011). A difference in the implementation approaches of ERP and BPR is highlighted. BPR is normally implemented as a 'big-bang' approach. This is considered the most appropriate approach, because BPR cannot be implemented in small phases (Stoddard & Jarvenpaa 1995). In regards, therefore, to the application of a big-bang or a phased approach ITIL has more in common with ERP than BPR.

A revolutionary type of organisational change was applied by seven of the eight organisations. The exception was Case C that applied an evolutionary change type. The progression for Case C from an existing mature ITIL service to an improved ITIL service is considered to have been an evolution rather than a revolution. The ITIL delivery of Case C had evolved rather than been revolutionarily transformed. The organisations that revolutionarily transformed their ITIL delivery all implemented ITIL from a starting position of an ineffective ITSM with either ad-hoc or limited processes.

The literature review did not identify conclusive material indicating a preferred or frequent approach to organisational change associated with ERP and BPR implementations as either revolutionary or evolutionary. Table 2-13 presented a comparison of STS tactics in regards to revolutionary and evolutionary change. The findings of Stoddard and Jarvenpaa (1995) were that revolutionary change involves the changing of technical and social systems at the same time whereas evolutionary change was a gradual change to technical and social systems. The findings of this research partially support the view of Stoddard and Jarvenpaa (1995). Each of the ITIL implementations were both a phased implementation and the changing of technical and social STS components simultaneously. Seven of the organisations conducted revolutionary change and one evolutionary. The findings of this research are that whether through evolutionary or revolutionary change, the STS components of social and technical can be changed simultaneously.

5.2.4 Models of Change

Each of the eight organisations implemented ITIL as a punctuated equilibrium model of change in which there are extended durations when no change takes place followed by short but significant periods of change (Burnes 2004d). Irrespective of the duration of the implementation each organisation managed change with an initial change that was significant followed with a series of smaller changes. Each organisation applied the change with a phased approach.

A punctuated equilibrium model of change has been associated with other STS organisational change. The punctuated socio-technical model, as depicted in Figure 2-14, has been associated with the implementation of ERP with an STS approach (Newman & Zhao 2008).

The organisations did not knowingly select a specific organisational change model to apply to the ITIL implementation. Cases A and B referred to the Kotter model (as promoted in ITIL guidelines) but did not apply it. None of the organisations stated a specific organisational change strategy had been applied. Table 4-73 summarises the organisational change strategy responses in the case study interviews. However, although the organisations did not deliberately adopt a specific organisational change management strategy, the organisations did change and

strategies were adopted and applied. Implementing ITIL into the organisations resulted in organisational change despite the lack of reference to a specific model. Each of the organisations conducted the ITIL implementation as a planned change. This is consistent with the organisations proactively addressing change to move the organisation from an existing state to a desired state. The change was deliberate and planned to implement ITIL or to improve the existing delivery of ITIL.

A planned approach to the change supports previous research into the implementation of ITIL. As discussed in the literature review a survey conducted by Al-Turki (2011) investigated the implementation of ERP as planned change. Their survey found 55 per cent of organisations applied planned change strategies and another 25 per cent had at least some planned change applied informally. The survey further identified that an ERP implementation was four times more likely to be successful if a planned change strategy is applied.

The literature review discussed the BPR implementation as involving both planned and emergent change. The literature review presented the view that there are both planned and emergent change strategy fundamentals in a BPR implementation, although the literature predominantly refers to planned change for STS implementations (Grover et al. 1995). A planned approach to the ITIL implementation as identified in the research conducted is consistent with previous research into ERP and BPR implementations.

5.2.5 Socio-Technical Systems Approach

All organisations implemented ITIL with an STS approach to change in that the social and technical aspects of the organisation were provided with a required focus. However, an STS approach to the ITIL implementation was not a deliberate strategy selected by any of the organisations. Regardless, the organisations each provided appropriate focus to the four components of the socio-technical work system to address the requirements of the ITIL implementation. The STS approach to change; unknowingly applied by the eight organisations; included consideration for the social and technical components of the organisation. The STS approach includes an understanding of the interactions between the organisation and technology (Tapia & Maitland 2009).

The finding of this research has been that the primary focus was provided to the people component, with a secondary but almost equal focus applied to the process component. Both social and technical components of the ITIL implementations received the focus from the organisations necessary to maintain a balanced Leavitt Model. The focus was not equal across social and technical components, but was focussed as required to meet the specific requirements of the organisation.

The primary focus of the ITIL implementation was applied to the people component of the STS model as shown in the summary of the ranking of effort applied to the socio-technical system components (Table 4-78). Focus on the process component was almost as high. The people component is a social component of the STS model and process is a technical component. Significant and almost equal focus was provided to both social and technical components.

5.2.6 Summary

The summary considers two aspects of the findings. Firstly, the organisational change strategies applied to the ITIL implementation are identified. Secondly the identification of an unintended STS approach to the ITIL implementation is discussed.

The organisations did not deliberately select and apply an organisational change model for the ITIL implementation. However, there is consistency in the organisational change approaches and types that were applied across the eight cases. Each organisation implemented ITIL as proactive change. The implementation of ITIL for each of the organisations was typical of the punctuated equilibrium model of organisational change. The change type applied to organisations (based upon information from seven organisations) is that the change was a revolutionary or transformational change for the organisation. All organisations conducted the ITIL implementation as planned change. Additionally all organisations applied an STS approach to the ITIL implementation. The types, models and approaches to organisational change applied by the organisations to the ITIL implementations are summarised in Table 5-1.

Table 5-1 Organisational Change Models, Types & Approaches Applied to the ITIL implementation

Proactive	8	Reactive	0
Punctuated Equilibrium	8	Incremental	0
Phased	8	Big Bang	0
Revolutionary / Transformational	7	Evolutionary	1
Planned	8	Emergent	0
STS Approach	8	Non STS Approach	0

An STS approach to an ITIL implementation is consistent with change strategies for other socio-technical systems including ERP and BPR. This research has found that although the organisations did not consciously identify an STS approach they did design the change with consideration for the interaction of the STS components. The design of the ITIL implementations recognised the new processes, the people requirements and need for skills, a tool was required and that organisational adjustments were necessary. The inadvertent STS approach undertaken to implement ITIL successfully addressed these organisational components.

5.3 A Socio-Technical Approach to Implementing ITIL

RQ2. How does a socio-technical approach to the implementation of ITIL influence the success?

Although each of the organisations did not consciously select an STS approach to the ITIL implementation evidence from the analysis of the case studies indicates that they have in fact implemented ITIL with an STS approach. The research identified that the ITIL implementation required changes to the four components of the socio-technical work system. Applying an STS approach, either consciously or without intent, will result in the four components being considered within the organisational change and the requirements addressed. As summarised in Table 4-79, each organisation implemented processes, implemented a new tool or used an existing tool and provided training in ITIL. Seven of the eight organisations created new roles and six of the organisations created new positions. Each of the organisations that implemented a new tool provided training in that particular tool.

It can be seen that an ITIL implementation has a significant impact on all four components of the socio-technical system.

5.3.1 Focus on STS Components

To support the identification of the application of an STS approach to the organisational change the organisations were requested to rank the effort provided to each of the STS components. The summary of rankings of magnitude of effort for the STS components (Table 4-78) identifies that the most effort was provided to the people component and the next most effort was provided to process. Tool and then organisational structure were the next in magnitude of effort. This finding suggests that the approach to change by the organisations recognised the need for attention to both social and technical components. The organisations adopted strategies in recognition of the changes necessary for the ITIL implementation. Equal focus was not provided to all components but sufficient focus was provided as necessary for the ITIL implementation.

All organisations implemented ITIL processes with five organisations implementing a new tool to support the processes. The implementation of the new processes and the tools is reflected in the training provided. The view has been indicated that the upgrading of skills and knowledge was a necessary component of the ITIL implementation. Training for the tool was provided for staff at all organisations that implemented tools. Training in ITIL processes was provided for staff at all organisations. It is to be expected that the process component would require a significant effort as ITIL is a process-based framework for IT service management. Focus was provided to the tool as determined and required by the organisations.

The average ranking of the organisation structure component was 3.5 representing the least effort provided to any of the STS components. Case D did not provide details of changes for the organisation structure component. Case A implemented new roles but not new positions whereas the other organisations implemented both new roles and positions. The magnitude of effort ranking for the organisation structure component was always ranked 3rd or 4th. The average ranking for the organisation structure component indicates that a successful ITIL implementation may be achieved with less effort than for the other STS components.

The focus provided by the organisations to the STS components of both social and technical parts of the organisation supports the suggestion by Galliers and Baker (1995) that an STS approach to an ITIL implementation may result in positive outcomes. The primary focus was provided to people, a social component, and then to process, a technical component. Similarly the least effort applied was to organisation structure, a social component, and then to tools, a technical component. Both primary components of the STS component, social and technical, are represented according to magnitude of effort provided. An indication that this was not an STS component approach would be if the primary focus was provided to two technical components or two social components.

The STS approach to an ITIL implementation is evident when considered in the context of critical success factors. Table 2-21 presented a comparison of CSFs identified through research by Pollard and Cater-Steel (2009) into ITIL implementations. The CSFs include training, software selection and process priority. The research conducted has identified that these are three key aspects of the STS approach. Table 4-78 presented the order of magnitude of effort applied to the four components of the socio-technical systems. People, process and tool in that order are provided with the most focus and effort. The STS approach adopted by the organisations has resulted in staff being trained to develop the appropriate skills, the selection of an appropriate tool and the implementation of the ITIL processes. Processes required a significant effort because they needed to be designed to meet the needs of the organisation. The organisations have adopted similar processes but the processes themselves will differ due to the need to design them to produce business outcomes specific to the particular organisation's needs. It has been determined that the organisations did not consciously adopt an STS approach. However, the STS approach undertaken addressed CSFs that were related to three of the four STS components.

Figure 5-1 displays the STS model derived from Bostrom and Heinen (1977) that is applicable to the case studies. The numerical value displayed for each socio-technical component is the average ranking of magnitude of effort as displayed in Table 4-78.
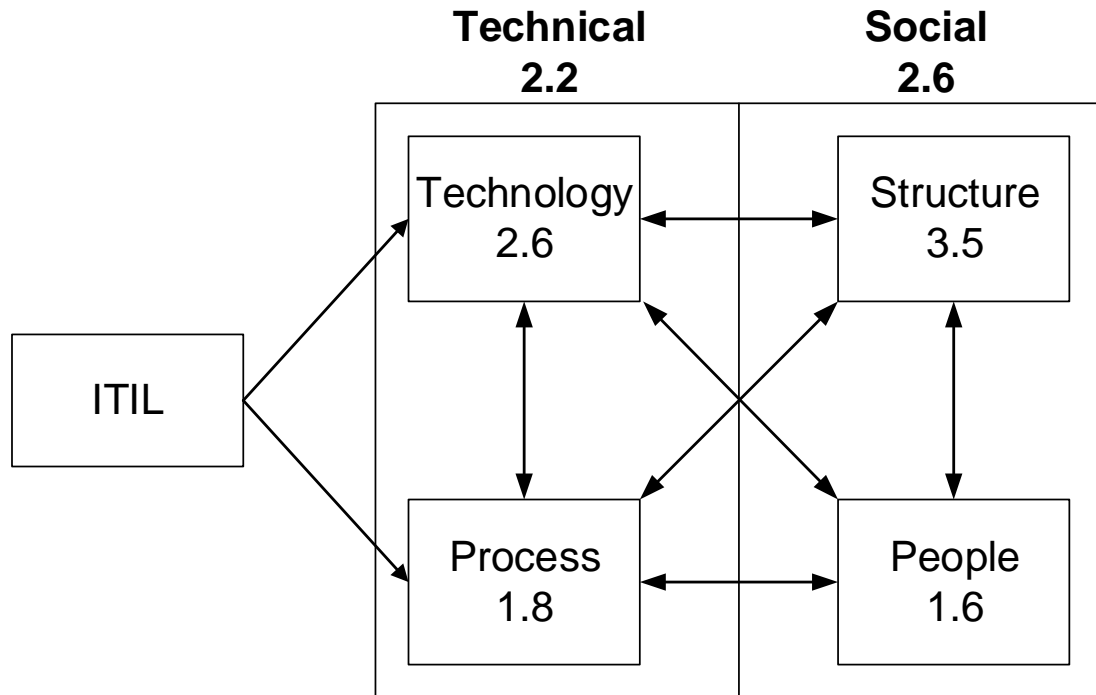
Figure 5-1 ITIL Implementation as STS Change

Source: Adapted from Bostrom and Heinen (1977, p. 25)

The model displays the socio-technical system as the components of the two primary components, social and technical. According to the averaged ranked effort the technical component received greater effort than the social component. The greater effort provided to the technical component is despite the social component of people receiving the most effort of the sub-components. This is offset however by the component of organisation structure receiving the least effort. The technical components of task and technology receive the second and third ranked effort. The social components of people and structure received the first and fourth ranked effort.

This research has identified that an STS approach can be applied to a successful ITIL implementation but that the effort applied to each component does not need to be equal. The organisations applied the effort to the STS components that they considered appropriate to the ITIL implementation with results that each ITIL implementation was successful. Each ITIL implementation for the organisations was different and each applied the degree of effort required that was necessary for their specific circumstances.

Although the projects and the organisations were different, certain consistencies are apparent. Each organisation applied a socio-technical organisational change approach without consciously doing so.

The findings of this research can be considered in the context of previous research into the implementation of socio-technical systems. Research into the implementation of ERP and BPR has identified a number of reasons for the possible failure of those systems. A focus on the technical aspects of the change has been identified as resulting in failures. The failure of BPR programs because of a focus on technical issues with less focus on people has been noted (Zaidifard 1998). Similarly, a lack of focus on training has contributed to ERP failures (Grabski et al. 2011). A lack of organisational change and not addressing the impact of the work on people has been identified as a reason for failure of ERP system implementations. The same review also identified that a focus on technology at the expense of people affected the implementation negatively (Stapleton & Rezak 2004).

Key aspects of the STS literature relevant to this research identified that the STS approach to change recognises that the socio-technical system consists of technical and social aspects that interact (Grover et al. 1995) and that the equal share of the focus between technical and social components in a socio-technical system including ERP and BPR has been emphasised (Galliers & Baker 1995). The research conducted into the STS approach to a successful ITIL implementation finds that although one component or sub component may have more focus than others and that the focus or effort was not equal it can be considered that it does not need to be equal. ERP and BPR implementations have previously failed due to too much emphasis on a component or not enough on another (Galliers & Baker 1995). This research into ITIL implementations identifies that successful implementations may occur when the focus is not equal but when the focus is appropriate to requirements.

In contrast to the ERP and BPR implementations that failed due to a focus on one component or a lack of focus on other components the ITIL implementations provided appropriate focus to the STS components. The case studies demonstrate that an equal focus on process and people as technical and social components respectively identifies that a socio-technical approach may influence the success.

On the basis that too much focus or too little focus on STS components can result in organisational change failure the STS approach to an ITIL implementation has been associated with successful organisational change.

The case studies identify that a near equal and significant focus was provided to the technical component of process and the social component of people. Based therefore upon eight case studies it could be concluded that these are the most critical components to provide focus to. The focus or effort required for the tool produces a consistent result. Three organisations maintained an existing tool and ranked the effort as third. Three other organisations purchased new tools and also ranked the effort as third. There is an indication that the effort for tool is not ranked based upon whether an existing tool is used or a new tool is purchased. It may also be concluded that process and people will rank first or second in a socio-technical approach to an ITIL implementation because they are the components considered the most important and requiring the greatest attention. Consequently the effort required for tool may be less than that of people and process components irrespective of whether a new or existing tool is used. The organisational structure was ranked third and fourth by four of the organisations. Despite new roles being created in seven of the organisations with new positions in six, the organisational structure effort was consistently rated lowest or near lowest. It could be considered that an organisation implementing ITIL can still provide adequate focus to a component even if that focus is less than that of other components. The results of this research differ from the findings of the ERP implementations. Stapleton and Rezak (2004) identified a lack of focus on the organisational structure as a reason for the failure of ERP implementations. It may also be considered that the effort applied for the organisational structure for the ITIL implementations in the cases was adequate and as required rather than lacking in focus. The result highlights that an ITIL implementation may still be successful with the organisational structure receiving the least effort of the four components but that the least effort may be the appropriate magnitude of effort required.

To summarise, in the context of the socio-technical system, effort was provided as required by the organisations to both social and technical components of the organisation such that the ITIL implementations were considered successful.

5.3.2 Issues Encountered

The issues identified and the actions taken to address them further support the view that an STS approach is applied to the ITIL implementations. The most common issue identified by the organisations is related to acceptance by staff, resistance by staff or concern by staff. Actions were undertaken to address this issue. Staff related issues occurred in all STS components. Resistance to change by staff was identified in respect to all the STS components of process, tool, organisation structure and people. The result was encountered because of resistance by staff to the use of a new or changed tool, resistance to the new or changed positions and resistance to the use of the new processes. However, it is the people STS component from which actions are identified and implemented to overcome people-related issues. The additional effort required in the people STS component is reflected in that people is the STS component that required the most effort. The STS component of people is not just for training but for all people-related issues and requirements.

The actions to address these issues contributed to an increased focus and effort provided for the people component. Despite ITIL being a process-based service supported by technology, slightly more effort was provided to the people component than to the process component.

5.3.3 Summary

On the basis that eight organisations that successfully implemented ITIL applying an STS approach, albeit without deliberate intention, the finding can be considered that an STS approach to an ITIL implementation may influence the success of the organisational change. This is a cautious finding because the research did not include an unsuccessful ITIL implementation or an ITIL implementation in which an STS approach was not applied. Based upon the research conducted, the focus provided to the STS components of process and people is identified as key components that require the most effort. Providing less attention to the tool and organisational structure does not indicate that they were neglected. It can be considered that they received the attention that they required. The ITIL implementations were successful with the tool and organisational structure components receiving lesser focus. Success was achieved with organisational structure and tool receiving less effort than process

and people. It could be further concluded that this outcome is because tool and organisational structure require less effort and that process and people require more effort in order to achieve a successful ITIL implementation.

Having identified that an STS approach to change was applied to the ITIL implementations, the question needs to be answered as to how the STS approach contributes to the success of the ITIL implementation. As discussed, varying degrees of effort were applied to the four aspects of the STS model. Applying the STS approach, intentionally or unintentionally, results in each of the STS components receiving focus. The identification in the ITIL implementation project of the four STS components highlights the requirements of each for attention. The ITIL processes and the tool requirements were identified by the organisations. This research supports the view of Chen and Nath (2008) that the STS approach considers that the most favourable outcome occurs for an organisation when the social and technical components are effectively combined. The STS approach to a redesign of a socio-technical system considers the STS components are related and the requirements of each must be achieved at the same time.

This research has identified that the organisations have considered the STS components, that an STS approach has been applied and that the requirements of the STS components been met. The end result of eight successful ITIL implementations has been achieved; and for each the STS components were considered, the interactions between the STS components addressed and the attention provided as necessary.

5.4 Organisational Change Factors

RQ3. What organisational change factors determine success or failure of an ITIL implementation strategy?

The findings for this question are limited as a result of the fact that all organisations that participated in the case study considered the ITIL implementation to be successful. The comparison between a successful and an unsuccessful ITIL implementation cannot be made. The comparison, therefore, of the organisational

change factors for a successful and an unsuccessful ITIL implementation strategy cannot be made.

5.4.1 Relative Success of the ITIL Implementations

A determination however of the relative success of the ITIL implementations has been made and presented in Table 4-69. As documented in the cross case analysis a numerical score has been provided to mark the success of the ITIL implementations based upon the ten criteria displayed in Table 4-69. The scoring of the success identifies that some of the organisations achieved a more successful ITIL implementation than others. Cases B and C achieved the highest score and therefore are considered to have had the most successful ITIL implementations. Case E recorded the lowest score and therefore is considered to have the least successful implementation. However, it needs to be noted that Case E still identified a successful implementation of ITIL processes. Based upon the scores the organisational change strategy of the organisations can be examined to identify strategies that are common to successful ITIL implementations. This section will discuss the organisational change strategies applied by the organisations and summarise the results in alignment with the scores achieved for the degree of success.

5.4.2 Senior Management Support

A CSF that has been identified in ERP implementations and ITIL implementations is management support. Table 2-12 presents the CSFs identified from research into ERP implementations. Management support is identified as a CSF in eight of the twelve research articles reviewed. Table 2-21 presents the CSFs identified in research by Pollard and Cater-Steel (2009) into ITIL implementations. Each of the studies as displayed in the table recognised management support as a CSF. Management support is required to fund the implementation and to provide authority for the requirement to conform to the processes being implemented. Financial resources are required for training and tools (Pollard & Cater-Steel 2009). Table 4-68 presents the management support results provided for the eight case studies. Two of the organisations did not identify the management support provided.

Each of the other organisations recognised that management support was provided, although not always initially and not always at all management levels. However, management support was provided and authority, funding and support for the conformation to process provided. Tan et al. (2009) recognised the importance of senior management support and discussed the governance that is included with the support. Management support is evident in that the ITIL implementations were completed successfully. Without management support the authority to implement ITIL would not be provided and funding would not have been available for the activities, including tools and training, to fulfil the ITIL implementation. Management support will not guarantee that the ITIL implementation will be successful but if evident demonstrates the engagement for the organisation. Previous research has described an ITIL implementation that displayed improved progression after senior management support was provided with the subsequent action to delegate authority to process owners (Tan et al. 2009). The case studies confirm previous research that management support is an important aspect of the organisational change management factors.

5.4.3 Organisational Change Management Strategies Applied to the ITIL Implementations

The change management strategies applied to the ITIL implementation have been discussed in response to Research Question 1. The outcomes of the discussion are summarised in Table 5-1. The organisational change factors of the eight ITIL implementations are the same in all respects with the exception of a revolutionary or evolutionary change approach. Case C applied an evolutionary approach and all other organisations applied a revolutionary approach. It could be considered that the similarity of the eight organisational change approaches in association with eight successful ITIL implementations is an indicator that that the strategies applied influences the success. This finding could be considered as inconclusive because an unsuccessful ITIL implementation was not a subject of the research.

Certain consistency is apparent in regards to the ITIL implementations. Each ITIL implementation was proactive and followed a punctuated equilibrium model of change. Each of the eight implementations was applied with a phased approach and is considered to be revolutionary or transformational change.

Each organisation implemented change as planned change and with an unintentional STS approach. The exception was Case C that applied evolutionary change. Case C is the only organisation that had an existing mature ITIL based ITSM delivery prior to the ITIL implementation program.

Prior research has identified that a link exists between proactive change and planned change. Proactive change has been associated with planned change because the opportunity exists for preparation (Bartol et al. 2005; Greer & Ford 2009). The results of this research support this finding. The ITIL implementation in all the case studies was a proactive change and conducted as planned change.

The literature review referred to the survey conducted by Al-Turki (2011) that found that 55 per cent of organisations applied planned change strategies and another 25 per cent had at least some planned change applied informally when implementing ERP. This survey also found that a planned change strategy for an ERP implementation was four times more likely to be successful. BPR implementations have applied both planned and emergent change strategies but reference is made to planned change as mainly applied for socio-technical system implementations. The view is held that a planned change approach should be applied to a BPR implementation for it to be successful (Grover et al. 1995).

Based on a comparison of the planned change strategy identified in this research with literature relating to ERP and BPR implementations it could be considered that when an ITIL implementation is applied as proactive change it should be applied with a planned change approach. The literature related to ERP and BPR implementations and with the ITIL implementations indicates that a planned change approach is an organisational change factor that may influence the success of the ITIL implementation.

The phased approach has been identified in research by Al-Turki (2011) as being applied to most ERP implementations. This is considered to be an approach that reduces risk. In contrast to an ERP implementation, a BPR implementation is applied with a big bang approach only. The BPR big-bang approach is considered to be applied because BPR must be implemented all at one time (Stoddard & Jarvenpaa 1995).

Stoddard and Jarvenpaa (1995) have identified that a phased STS approach provides the opportunity for an organisation to adjust gaps as social and technical change occurs simultaneously. Previous research into ITIL implementations has identified that some organisations will implement with a big bang approach and others with a phased approach (Pollard & Cater-Steel 2009). This research has identified that a successful ITIL implementation can be achieved with a phased approach. Additionally with seven implementations as revolutionary change and one implementation as evolutionary change it is evident that a phased approach for an ITIL implementation may be successful regardless of the nature of the change.

Each of the organisations implemented ITIL as a punctuated equilibrium model of change. Punctuated equilibrium is a model of change in which significant change occurs after periods of no change (Burnes 2004d). Although each organisation applied change over various durations and as phased implementations the initial implementation of ITIL would have had a significant impact on the organisation. Certainly this is a more significant impact at one time than would result from an incremental change model. As a model of change applied successfully by all organisations, evidence is apparent that this approach of a change model is a change factor than can be applied with a successful result. Additionally a punctuated equilibrium model can be applied with an STS approach. This has been referred to as a punctuated socio-technical model as displayed in Figure 2-3. The displayed model as described by Newman and Zhao (2008) enables actions to be taken when gaps are apparent between the STS components. This is further represented in Figure 2-14. The punctuated equilibrium model of change can be applied to an STS approach and in combination address gaps between the components. It can be considered therefore that a punctuated equilibrium model of change can be applied successfully to an ITIL implementation and in conjunction with a STS approach can address gaps between the components.

The organisational change factors applied to the ITIL implementations may produce successful results as the literature has presented and as represented by the results of the case studies for this research. In respect to the scores representing a degree of success of the ITIL implementations there are no apparent outcomes relative the strategies adopted.

The similarity of the organisational change factors applied is represented by the similarity of outcome. All eight organisations identified a successful ITIL implementation. The variation to the success was only in regards to the extent of success. The least successful still scored a 1.7 average out of a possible 2. The variation between highest and lowest average scores was not statistically significant. Due to the similarity of the organisational change factors applied, as displayed in Table 4-69, it could be concluded that the success, or degree of success, is influenced by factors outside the organisational change strategies. Seven organisations applied the same known organisational change factors and all organisations identified their ITIL implementations as successful. However, the degree of success as measured by the average score varies. Case C varied in the organisational change factors by applying an evolutionary approach but still scored 1.8. This placed it approximately mid-point. Other organisations were both higher and lower in terms of the average score. The seamless end to end service was the only criteria for success that was not consistently identified as achieved. Case A declined to answer the criteria due to a lack of measurement. Cases D, E and G indicated partial success only and Case C responded that this was not successfully achieved. It is of interest to note that incident management was a significant focus of the ITIL implementation and implemented by all organisations and yet Cases A and G were only partially successful in consistently logging incidents. A reduction of costs would similarly be expected to be a critical requirement yet this was not measured by Case A and not successfully achieved by Case E.

5.4.4 Summary

As stated earlier, a limitation of the research was that the sample did not include any examples of failed ITIL implementations. Consequently it is difficult to identify if specific organisational change strategies provide different influences on the success of the ITIL implementation. RQ1 identified the organisational change strategies applied by the organisations to the ITIL implementations. Answering RQ3 has sought to identify the consistency of the strategies applied and the subsequent consistencies of the success of the ITIL implementations. The organisations did apply similar change strategies and produce similar results in regards to the criteria for success.

It can be considered that based upon the similarity of the organisational change strategies and the results of the implementations a relationship between strategy and success exists.

Previous research conducted on the socio-technical systems of ERP and BPR supports the view that the organisational change strategies applied to the ITIL implementations did contribute to the successful outcomes. However, the comparison cannot be made of the organisational change strategies of a successful and an unsuccessful ITIL implementation.

The extent of this research does not provide information regarding the other variables that affect the measure of success when the same organisational change factors are applied. It is possible that variations exist in regards to the interpretation of the criteria by the participants, their measurement of success and the manner in which the projects were managed. These considerations are outside the scope of this study. It can be considered that similar organisational change factors were applied resulting in successful ITIL implementations and these outcomes are generally supported by research into ERP and BPR implementations.

5.5 The Leavitt Diamond and Socio-Technical Systems Relationships

RQ4. How does Leavitt's Diamond identify the relationships between socio-technical components during implementation of ITIL?

The Leavitt Diamond as a model of organisational component variables is an important component of the research and of understanding the organisational change factors that influence the success of the ITIL implementation. As described in Chapter 2, the Leavitt Diamond is a model of organisational change that proposes that changes to components of a work system will create a requirement for change elsewhere in the work system (Galliers & Baker 1995). The Leavitt Diamond is relevant to the research and the ITIL implementation because a socio-technical approach to planned change requires the consideration of the components that interact (Bostrom & Heinen 1977).

The research included the STS approach due to the consideration that applying a socio-technical approach to an organisational change may result in achieving a successful outcome (Galliers & Baker 1995).

RQ4 seeks to understand the relationships that exist between the components of the Leavitt Diamond and the impact upon them in an ITIL implementation. The theory of the Leavitt Diamond recognises that a change to one of the four components will require a change to others so that the model remains balanced (El Sawy 2001). This question in examining the relationships will identify the effect to the relationships between the STS components when ITIL is implemented. The question is answered in two parts. The first part considers the balance of the Leavitt Diamond in respect of the organisation's ITIL implementations. The second part considers the application of the Leavitt Diamond to identify the relationships between the STS components when ITIL is implemented.

5.5.1 The Balance of the Leavitt Diamond

RQ2 discussed an STS approach to an ITIL implementation. The discussion included the effort provided to each of the STS components during the ITIL implementations. RQ2 identified that an STS approach to the ITIL implementation was applied and that focus was provided to each of the STS components. However, the focus provided to the STS components was not equal. Each STS component received a varying degree of focus as identified by the organisations. Each organisation identified their ITIL implementations as successful. It can be concluded therefore that the Leavitt Diamond was balanced. Further, to maintain or achieve the balance the STS components were provided with the appropriate, but varying, focus.

The conclusion is reached that the ITIL implementations, to be successful and maintain the balance of the Leavitt Diamond, include the required appropriate effort for each STS component but this does not require an equal effort for the social and technical components. El Sawy (2001) explained that to maintain the balance of the Leavitt Diamond a change to one STS component will require changes to other STS components. Bostrom and Heinen (1977) provided a further requirement that for an STS approach to organisational change, the social and technical components are to be provided with equal focus.

The identification that to maintain the balance of the Leavitt Diamond the effort does not need to be equal but appropriate differs from the view of Bostrom and Heinen (1977) that equal focus needs to be applied but supports the view of El Sawy (2001) that does not stipulate the requirement of equality of effort.

The view is reached from this research that organisations that implement ITIL include the consideration of requirements of the STS components and the requirements of the organisation and apply the changes to the STS components that are considered necessary and appropriate. This research has found that changes to one STS component did affect other STS components when implementing ITIL; and that effort applied to the STS components did not need to be equal, but appropriate, to the requirements of the ITIL implementation and the organisation.

5.5.2 Relationship Between STS Components

The relationship between STS components is determined by the actions taken by the organisations in response to requirements of the ITIL implementation. The data collected in the case studies was analysed in the cross case analysis. The strategy to identify the relationships between STS components includes also the effort applied to each STS component. The magnitude of effort applied is viewed in the context of the requirement for amount of effort and the activity of the ITIL implementation associated with it. The research identified that the organisations undertook similar activities which can be understood to be in response to other activities. The answering of this question will identify the actions performed in an ITIL implementation and the relationships between the STS components. Table 4-79 displays the key activities undertaken by the organisations.

Figure 5-2 displays the activities undertaken by the organisations during the ITIL implementations mapped against the Leavitt Diamond. Each STS component displays the average ranking of effort applied by the organisations.
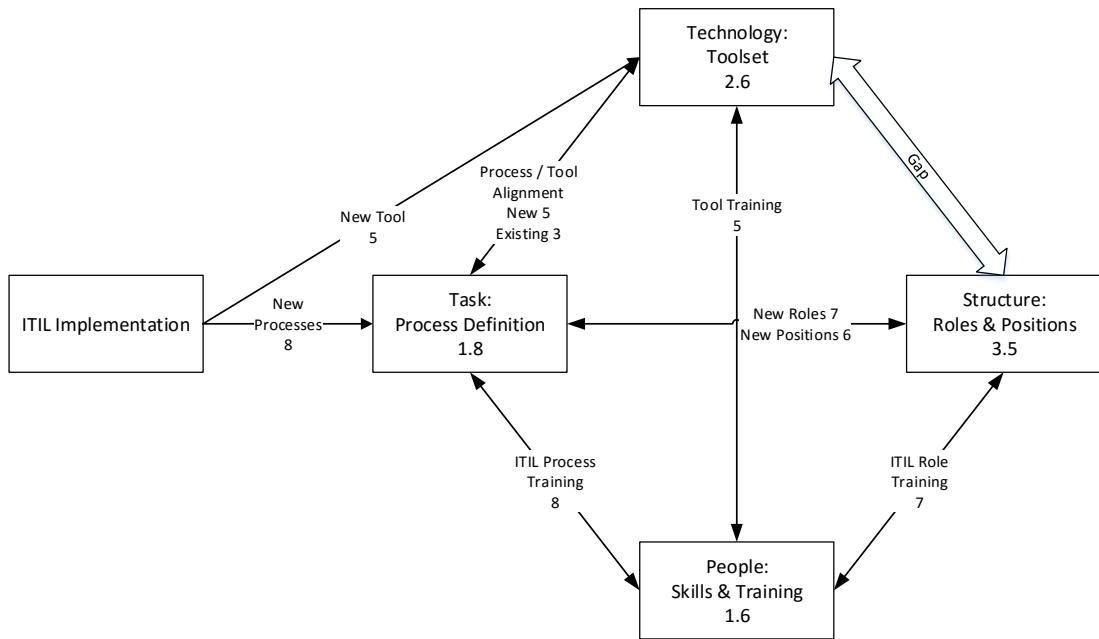
Figure 5-2 Relationships Between the STS Components of the Leavitt Diamond

Each arrow in Figure 5-2 displays an activity necessary for the ITIL implementation with the number of organisations that applied that activity. In alignment with the Leavitt Diamond as a model of organisational change, Figure 5-2 exhibits that an activity affecting one STS component affects other STS components. The diagram displays that all eight organisations implemented ITIL processes. Table 5-2 presents the actions undertaken as displayed in Figure 5-2 with a description of resulting actions.

Table 5-2 The Variables and Effects of Implementing ITIL

Action	Variable	STS Component	Average Magnitude of Effort	Primary Effect	Secondary Effect
Implementing ITIL: New or changed processes	The processes selected to be implemented	Process	1.8	ITIL Processes are to be designed and implemented to meet the requirements of the organisation	The skills of the staff are to be upgraded with training in the processes New positions and/or roles are created The processes are to be aligned with the requirements of the tool
	Creating new roles and positions	Organisation Structure	3.5	Changes to the organisation structure. New roles and/or positions are created Authority provided to the roles	The staff occupying the new roles and positions are be trained in the requirements of their roles and positions
	Implementing a new tool or using an existing tool	Technology	2.6	Maintain or modify an existing tool Implement a new tool. The tool may be purchased or developed in-house.	The tool and processes are to be aligned The skills of the staff are to be upgraded with training in the tool
	The skills required by the staff The people issues to be addressed	People	1.6	Identify the training requirements The staff are to be trained in the processes, the roles and the tool Actions to overcome people issues	

The ITIL implementation requirements, as depicted in Figure 5-2 and Table 5-2 and the resulting effects on the STS components are explained in the following four sub-sections:

5.5.2.1 Process

The primary effect of implementing ITIL processes requires that the processes are designed to meet the specific requirements of the organisation and then implemented. Each organisation implemented new ITIL processes although none of the eight organisations implemented all of the ITIL processes and functions. This finding is consistent with previous research by Iden and Langeland (2010). The processes selected were consistent with previous research by Iden and Langeland (2010) and Gacenga et al. (2010). The process STS component relates with a secondary effect to the STS components of tool, organisation structure and people. The tool STS component will be affected with the requirement for an alignment of the processes with the new or retained tool. The organisational structure may be affected with a requirement for new roles and positions to support the processes with authority for conformance. The people STS component will be affected by the requirement for training in the ITIL processes for the staff. Creating and implementing ITIL processes was accorded the second highest after people STS component.

5.5.2.2 Technology – Tool

ITSM tools are necessary for an ITIL implementation. Five of the eight organisations implemented a new tool and three continued using an existing tool. One organisation that implemented a new tool developed their tool within their IT section. The other organisations that implemented a new tool applied a purchased software package. The literature review did not identify previous studies of the application of tools in conjunction with ITIL implementations. The tool supports the recording of process transactions and records including incidents, problems, CIs and changes. The primary consideration for the tool in the ITIL implementation is that a new tool is implemented or an existing tool is retained.

The requirement for the tool creates relationships with other STS components. The tool and the processes need to be aligned. The tool needs to be able to support the requirements of the ITIL processes.

Consequently a relationship exists between the STS components of tool and process. The requirements for the staff to use the tool will require training for the staff. Each of the organisations (5) that implemented a new tool referred to the people component in regards to training. The people STS component will be affected by changes to the tool STS component with the requirement to ensure the skills are maintained or improved to meet this requirement. The organisations identified that in a ranking of effort the tool STS component was the third most effort required for an ITIL implementation.

5.5.2.3 Organisation Structure

The ability to manage the ITIL processes affects the STS component of Organisational Structure. Seven of the organisations implemented new roles and six created new positions. Organisational Structure interacts with the STS Component of process. The new roles and positions are created to manage the processes and provide authority to the new services. As a consequence of the new roles and positions the people STS component is affected. There is a need to provide skills to the people that are performing the new roles. A relationship exists therefore between the Organisational Structure and people STS components. The organisations identified that in a ranking of effort the Organisational Structure component was provided with the least effort.

5.5.2.4 People

As a process-based ITSM framework, ITIL requires that the people that are required to apply ITIL or manage ITIL understand and know the processes. Additionally it is necessary that the people who have a requirement to use the tool have the skills to do so. Training requirements need to be identified. This is a key requirement of the people STS component. The people STS component then relates to the STS components of process, tool and Organisational Structure with the training requirements for the ITIL processes and the necessary skill requirements. Each organisation that implemented new processes (8), implemented new tools (5) and implemented new positions and roles (7) ensured that the appropriate training was provided for the requirements.

Relationships therefore exist between all STS components in regards to the people skills. The organisations identified that in a ranking of effort the people STS component was provided with the most effort.

The people STS component however is not only relevant in regards to training. As explained in 5.3.2 issues occur in ITIL implementations that are related to the people affected by the changes. In particular resistance to change needs to be addressed. This includes resistance to change involving the new processes, the new tool and changing roles. Actions to overcome resistance to change occur within the people STS component. Training was included amongst the actions by organisations to overcome the resistance to change. Consequently the effort required for the people STS component is bolstered by the additional need to address all people issues whether that is resistance to change or the training requirements.

5.5.2.5 Gaps in the Leavitt Diamond

As noted in §4.5.2 the organisations did not include within their ITSM services the technical support for the tools that are used for recording Incidents, Changes, Problems, CIs and other process transactions. It could be anticipated that new roles would be created for the support of the technology. This would affect the STS component of Organisational Structure. Possibly training and documentation may also be a requirement for the support of the tool. However, these requirements were not identified in the data from the cases. The view has been taken by the researcher that an IT technical team maintaining technology that supports the ITIL processes is not included with the ITSM environment but considered as a technical support only. Therefore, the activities, roles and training required to support the technology are not included in Figure 5-2 and Table 5-2. The gap is clearly displayed in Figure 5-2 with the absence of an interaction between the STS components of tool and Organisational Structure.

5.5.3 ITIL STS Organisational Change Model

The relationships between the STS components can be further explored with the development of an ITIL STS Organisational Change Model. The consistency of the results from the cases identifies that a model of organisational change incorporating an STS approach may be applicable to ITIL implementations.

The relationship between the STS components and the specific requirements of an ITIL implementation that include new processes and either a new or an existing tool dictate the decision-making requirements of the organisation. The cases identify that in response to new processes and the tool requirement, the organisations made decisions and subsequently performed further actions. The result of the decisions and subsequent further actions was that the ITIL implementations were successful and the Leavitt Diamond remained balanced. The model and plan are based upon the model of change for an ITIL implementation displayed as Figure 5-2 and supported by Table 5-2. The ITIL STS Organisational Change Model provides a view of the implementation of ITIL by the organisations implementing ITIL and of variables occurring within the implementation as a result of choices made and requirements to be met. The model displays the effects on STS components of the change to other STS components within the model.

Figure 5-3 ITIL STS Organisational Change Model
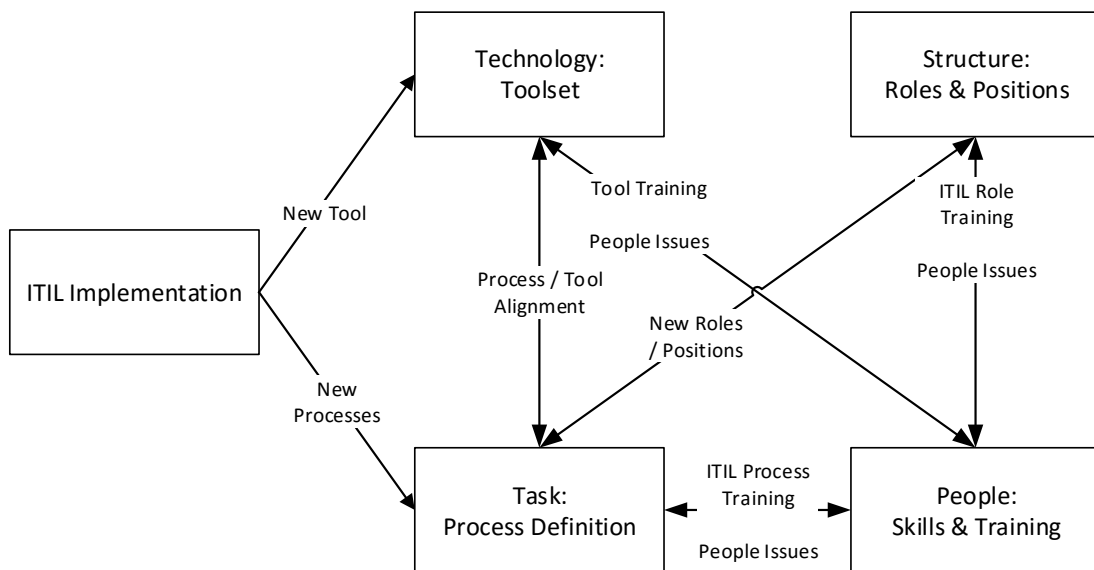
Based upon Figure 5-3 a high level plan presents the key actions or choices adopted by the organisations when implementing ITIL. The requirements, initial actions and resulting actions are modelled on the findings of this research. The high level plan displayed in Table 5-3 reflects the eight ITIL implementations studied and provides a model of the ITIL implementations.

The high level plan does not exclude additional requirements and actions but it does provide a basic identification of requirement, action and reactions undertaken by the organisations.

Table 5-3 High Level Plan for Implementing ITIL

STS Component	ITIL Implementation Requirement	Initial Action	Resulting Action
Process	New ITIL processes	Design and implement processes	Align process with tool
			Train staff in Processes
Technology	New Tool	Implement new tool	Align tool with process
			Train staff in using tool
	Existing Tool	Adjust tool as necessary	Align with process
Organisational Structure	Design organisation structure	Create new roles	Align new roles with Processes
			Train staff in new roles
People	Identify skill requirements	Determine training requirements	Train – processes
			Train- tool
			Train - roles
	Identify people issues (including resistance to change)	Address people issues	

An important outcome of the research is that limited choices are available to organisations when implementing ITIL. Certain requirements and actions are consistent across the cases. The limited choices and the consistent requirements dictate that to implement ITIL the decisions to be made and the outcomes are predictable. Figure 5-3 and Table 5-3 display both the results of the research and models that may be applied for organisations planning to implement ITIL.

5.5.4 Summary

The research has identified that relationships exist between the STS components. The relationships are affected by the requirements of the ITIL implementation. As noted in the cases there is variation between the ITIL implementations across the

organisations. The evidence from the research is that organisations will vary in regards to the requirements of the ITIL implementation. The research supports the Bostrom and Heinen (1977) finding that designing a new work system must take into consideration social and technical aspects of an organisation as well as the four components of technology, structure, people and task. The eight organisations implemented ITIL according to their own requirements. Variables have been identified including the processes implemented the tool as new or existing and the creation of roles and positions. The variables consequently affect the STS components.

The Leavitt Diamond was used for this research because it provides focus to the importance of the connections between the four components of the organisation (Price & Chahal 2006). The relationships between STS components, as displayed in Figure 5-2 and described in Table 5-2, identify that the decisions of organisations in regards to the requirements for an ITIL implementation will affect multiple parts of the socio-technical work system and need to be considered. The requirement to consider the STS components is further supported by the successful ITIL implementations of the organisations and the STS approach undertaken by them.

The research has also identified that in support of the balanced Leavitt Diamond the appropriate degree of effort or focus is required rather than an equal effort. The organisation's did not apply equal effort to the STS components yet successfully implemented ITIL with an STS approach. It is concluded that the organisations need to provide the effort necessary and that this may be variable depending upon the needs of the organisation.

The ITIL STS Organisational Change Model presents a plan for the ITIL implementation based upon the cases. The consistency of the requirements of the ITIL implementations and the relationships between the STS components results in a predictability by which organisations can identify the requirements, the decisions to be made and the outcomes required.

5.6 Chapter Summary

This chapter provided the findings of the research and answered the research questions. The chapter identified that the organisations applied a consistent model of organisational change strategy although not deliberately selecting a model. The organisations similarly applied an STS approach to the organisational change and again did not consciously select an STS approach. The organisations were different in size, nature and industry and yet without observation of organisational change models applied almost identical strategies.

The discussions identified that organisations applied an STS approach to the ITIL processes but did not consciously do so. The application of the STS approach resulted in the four STS components receiving an appropriate amount of effort and focus such that the ITIL implementations were successful. The research found that differing from some previous research the effort provided to the four STS components did not need to be equal but did need to be appropriate to the requirements of the ITIL implementation. The people STS component was found to be provided with the most effort followed by process, tool and organisation structure. The people STS component provided the training for the skills and knowledge required and for actions to overcome people issues including resistance to change.

A limitation of the research was identified resulting from the lack of a failed ITIL implementation. The comparison of organisational change strategies for successful and unsuccessful ITIL implementations would have enabled a thorough consideration of the organisational change factors that influence the success or failure of an ITIL implementation. However, it was considered that similar organisational change strategies adopted by eight organisations that all successfully implemented ITIL provided significant recognition of the common factors.

This chapter also considered the balance of the Leavitt Diamond and the relationships between STS components. The relationships between the STS components in an ITIL implementation were identified and mapped against a Leavitt Diamond. The finding was made that implementing new tools and processes had distinct impacts on other STS components. It was also found that a gap exists in the Leavitt Diamond for an ITIL implementation.

The technical support for the tool is not considered within an ITIL service with the consequence that no relationship exists between tool and organisation structure.

The ITIL STS Organisational Change Model presents the relationships between the STS components and the decisions that may be made that affect them. The cases revealed that limited options are available when implementing ITIL and as the relationships exist between the STS components it can be determined the actions that need to be taken and the impact on the other STS components.

Based on the findings documented in this chapter the contributions to research and practice will be discussed in Chapter 6. Included in the following chapter will be recommendations for practice that have been identified and the limitations of the study with directions for further research.

6 Conclusion

6.1 Introduction

The purpose of this research was to investigate the organisational change strategies that organisations were using to implement ITIL. Chapter 1 outlined the research problem and identified the requirement to develop an understanding of the organisational change strategies that organisations are applying to ITIL implementations.

Chapter 2 reviewed the relevant literature of organisational change and IT Service Management. The literature reviewed included the primary theories of organisational change and planned change including the STS approach to organisational change. The prior research into the implementation of the socio-technical systems of ERP and BPR was reviewed. A particular focus on the strategies for the implementation of ITSM and ITIL was applied with an emphasis on the implementation of ITIL with an STS approach.

Chapter 3 presented the research methodology and the research design. The chapter described and justified the approach to the research. This included the research paradigm and the methods by which the empirical data was to be collected and analysed. The case study approach and design was also described and justified.

Chapter 4 described the case study research and analysed the data collected from the eight participating organisations. The chapter also contained the cross-case analysis in which analysed data from the individual cases was compared and examined for contrasts.

Chapter 5 presented the research findings. The findings included the identification of the organisational change strategies applied by the organisations when implementing ITIL and answered the research questions. This chapter concludes the thesis by summarising the primary research findings and relating them to the objectives of the research. The chapter includes the contributions to knowledge and practice, the limitations of the research and directions for future research.

The chapter is organised in seven sections. This section is the introduction to the conclusion chapter. The following section, §6.2, summarises the research findings.

§6.3 and §6.4 present the contributions to knowledge and practice respectively. §6.5 includes the limitations of the research. Section 6.6 provides recommendations for practice, for the distribution of practice findings and for further research. The chapter concludes with a summary in §6.7.

6.2 Summary of Research Findings

The research aimed to address the research problem that the unsuccessful implementation of ITIL may result in the lack of expected benefits and poor return on a significant investment for organisations. There is an identified need to determine how organisations implement ITIL and what factors influence the success of the implementation (Pollard & Cater-Steel 2009).

The research study is presented in six chapters. Chapter 1 included the background and significance of the research. The research problem and the research questions were included in this chapter with the justification for the research and the contributions the research will make. An overview of the methodology adopted for the research was also included in the first chapter. Chapter 2 presented the literature review. Academic journals and theory texts were reviewed for literature relevant to the research. This included literature on the two core streams of organisational change and ITSM. The literature review focused on the STS approach to organisational change management and ITIL, the most popular ITSM framework. Chapter 2 culminated in a review of literature related to applying a socio-technical change approach to ITIL implementations. Chapter 3 described the research method applied to this research and justified the case study approach. The chapter also described the strategy undertaken to collect the data. The data collected for the research was documented and analysed in Chapter 4. Each of the eight organisations that participated in the research was described as an organisation and the data collected from each organisation was documented. The cross–case analysis was included in Chapter 4. The cross-case analysis collated the data from each organisation and compared the results. Patterns in the data across the organisations were considered and identified. Chapter 5 presented the research problem, the research questions and the findings taken from the research. The four research questions were answered in Chapter 5.

RQ1. What organisational change management strategies do organisations use to implement ITIL?

The research identified that the organisations did not deliberately select and apply an organisational change model for ITIL implementation. Table 5-1 presented the organisational change management models, types and approached applied to ITIL implementations. The results across the organisations are very similar. Seven of the eight organisation implemented ITIL with the same organisational changes, types and approaches. Case C already had an existing ITIL framework implemented whereas the other organisations were staring their ITIL implementations from a position of ad-hoc or limited services only. The change to the ITIL delivery of Case C is considered evolutionary rather than revolutionary. The organisations did not consciously select an STS approach to the ITIL implementations. Each organisation provided appropriate focus to the four STS components and is therefore considered to have unknowingly applied a STS approach.

RQ2. How does a socio-technical approach to the implementation of ITIL influence the success?

The research found that an STS approach to an ITIL implementation may influence the success by providing the appropriate level of focus to the four STS components. Table 4-78 presented the ranking of effort provided for each of the STS components. The people component was provided with the most effort with process closely following. The STS component of tool was provided the third most focus and organisational structure the least. Each of the ITIL implementations was considered to be successful. The research indicates that a socio-technical approach provides the appropriate level of focus to each of the components. The criticality of the STS approach is that each STS component is provided the attention required. This ensures that there is not an exclusion of an STS component or an STS component that is not included within the requirements of the ITIL implementation.

RQ3. What organisational change factors determine success or failure of an ITIL implementation strategy?

Each of the organisations that participated in the research identified their ITIL implementation as successful. To fully answer this question, cases that were both

successful and unsuccessful were required. However, the research did identify a commonality within the organisations in regards to the organisational change strategies applied that resulted in successful ITIL implementations. RQ1 identified the organisational change strategies that the organisations applied to their ITIL implementations. The view that the organisational change strategies applied by the organisations did contribute to the success of the ITIL implementations was consistent with research into ERP and BPR implementations. Based upon the similar organisational change strategies applied and the success of all eight ITIL implementations, it has been confirmed that a relationship does exist between the strategies adopted and the success of the implementations.

RQ4. How does Leavitt's Diamond identify the relationships between socio-technical components during implementation of ITIL?

The research identified that actions undertaken in the course of the ITIL implementation would result in effects to the STS components. As each organisation was implementing ITIL as a process-based framework, each organisation therefore implemented new processes. The organisations also determined a requirement for a new tool or to maintain an existing tool. The decisions related to these two key components of the ITIL implementation would have implications affecting the other STS components. The effects included the requirement for new roles, training of processes and tools and the requirement to address resistance to change. The application of the Leavitt Diamond identified the variables that occur within an ITIL implementation and the consequences or effects of changes made to STS components. The research highlighted the requirement that change does affect the STS components but it was not necessary for each STS component to receive an equal effort to maintain the balance of the Leavitt Diamond. The research identified that the STS components must receive the required effort. The actual effort applied may vary depending upon the requirements of the organisation and the ITIL implementation.

The results of this question also identified that the relationships between the STS components, when understood, can be related to changes necessary to implement ITIL. The ITIL STS Organisational Change Model has been created by the

researcher based upon the cases and the decisions made and outcomes of the decisions as they affect the STS components.

6.3 Contribution to Knowledge

This section presents the contributions to knowledge resulting from the research conducted into the organisational change strategies applied to the implementation of ITIL. As identified by Iden and Langeland (2010) and Pollard and Cater-Steel (2009) there is little research on how ITIL is implemented. Although more research into the implementation of ITIL has since been conducted (Iden & Eikebrokk 2015) the amount is still not significant. The academic research on ITIL has not included implementation strategies and the need for this research and the factors that influence the success of the ITIL implementation has been stated (Pollard & Cater-Steel 2009). §2.8 of the literature review discussed the gaps in the literature in regards to the implementation of ITIL. This research contributes to knowledge by identifying organisational change strategies applied when successfully implementing ITIL. This research addresses a gap in the existing literature.

6.3.1 Organisational Change Strategies

The research identified the organisational change strategies applied by the eight organisations that participated in the research. With the exception of a study of the ITIL implementations of four organisations by Pollard and Cater-Steel (2009) in which a big-bang or a phased approach was applied, other studies with reference to organisational change and ITIL implementations were not found in the literature review. A contribution to knowledge therefore is provided in regards to the organisational change approaches applied by the organisations in this research. Table 5-1 summarised the approaches to organisational change identified in the research. The finding that each organisation applied a phased approach partially supports the findings of Pollard and Cater-Steel (2009) in which two of four organisations that implemented ITIL applied a phased approach and the other two a big bang approach. The findings in regards to the organisational change approaches and type are new insights that have not previously been identified.

The consistency of the organisational change strategies applied in conjunction with the successful ITIL implementations is further contribution to knowledge. Eight organisations successfully implemented ITIL.

Each organisation implemented ITIL as proactive change and with a punctuated equilibrium approach. All organisations implemented ITIL with a phased change approach rather than with a big-bang approach. Each organisation implemented the change as planned change with a socio-technical approach. The change is considered as revolutionary for seven of the organisations. The only organisation that was evolutionary had an existing ITIL IT environment.

Research into organisational change strategies for the implementation of ITIL has not previously been conducted to this extent. Previous research into the implementation of ERP and BPR had been conducted and is referenced in the findings. A planned approach to change for ITIL implementations is consistent with findings into ERP implementations and partially consistent with BPR implementations. However, the planned approach to change for the ITIL implementations is in contrast with ITIL publications. The ITIL 2011 Service Transition and Continual Service Improvement books refer only to the Kotter approach (Axelos 2011a, 2011b). Whereas Kotter is considered as emergent change (By 2005). The findings from this research have not been located in other research on ITIL implementations. §2.8, Gaps in the Literature discussed the limitations of current research and the lack of understanding of the organisational change strategies. As identified in §2.6.5, implementing ITIL does not always achieve the expectations of the organisation. This research contributes to knowledge that addresses that gap. Pollard and Cater-Steel (2009) identified the need to research how organisations are implementing ITIL and the factors that influence the success of the implementation. A subsequent systematic literature review identified the research into the implementation of ITIL (Iden & Eikebrokk 2013). The lack of research identified in the later review supports the earlier findings that there is still a need for additional research. This research into the organisational change strategies applied to ITIL implementations provides knowledge that did not previously exist.

6.3.2 Socio-technical Change Strategies

A further contribution to research is the use of the socio-technical approach as a lens to explore organisational change in the implementation of ITIL. The review of existing literature did not locate prior research in this area. An article by Galliers and Baker (1995) discussed the possibility that an STS approach to organisational change displayed promise for a positive outcome. The literature review included multiple references to socio-technical systems change involving ERP and BPR however similar research into the implementation of ITIL had not been conducted. This research into ITIL implementations identified that the organisations did not knowingly apply an STS approach to organisational change. However, an STS approach was applied unintentionally.

Each of the organisations applied an STS approach to the implementation of ITIL and each ITIL implementation was considered successful. The research identified that the organisations did apply change to the components of the STS model and that the focus provided to the components was consistent across the cases. Table 4-79 displays the focus provided to the organisational change for the four components of the STS model. The consistency of the focus provided by the organisations indicates that the people and process STS components require greater focus than tool with the organisation component requiring the least focus. Further research including both successful and unsuccessful implementations is appropriate.

6.3.3 Balancing the Leavitt Diamond

The research contribution of the application of Socio-Technical Systems theory to an ITIL implementation provides additional knowledge in regards to the amount of focus to be applied to the four STS components. Research into an STS change approach for ERP and BPR has been conducted; however this is not the case with ITIL. This research identified that the focus provided to the four components was not equal. The components were not provided with the same amount of focus. El Sawy (2001) when discussing the Leavitt Diamond model stated that a change to one of the four components will require an appropriate change to the others to maintain the alignment of the model. The theory

identified that if there is a change to one of the four components then there will need to be an appropriate change to the others so that they stay equally aligned (El Sawy 2001). Varying views of the STS model exist in regards to requirement for focus. Tapia and Maitland (2009) believed that both the social and technical components need to be considered. Other articles propose the need for change in a socio-technical model to be equal for the four components.

This research, as presented in Table 4-79, identified that organisations do not need to provide the components with an equal focus. This outcome challenges the view of Galliers and Baker (1995) who identified the need for focus to the components to be equal. The focus provided could be considered to be appropriate to the needs of the organisational change. That each organisation achieved a successful ITIL implementation but none of the organisations provided an equal focus on the four components indicates that the equal focus may not be necessary. §2.4.9 and §2.4.10 of the literature review discusses prior research on the implementation of socio-technical work systems. These sections identified various articles and research that consider the failure of the changes. The sections further discussed change factors that contributed to the success. The view taken by previous researchers and described in the literature review is that in socio-technical change the four components need to be provided with focus. The disparity of the literature is in the extent of the focus provided to the four STS components. This research into ITIL implementation with an STS approach to change is that the focus does not need to be equal but that it needs to be the necessary or the required amount of focus. The amount of effort may vary between STS components. The finding of this research is that the STS components of people and process require more focus than the technology and organisational structure STS components. This has not previously been researched in the area of ITIL implementations and is therefore a significant contribution to knowledge.

6.3.4 Relationship between the STS Components

Existing research into the implementation of ITIL does not include the effect of the implementation on the organisation. This research contributes to knowledge by identifying how an ITIL implementation affects an organisation. This is achieved by considering the ITIL implementation in an STS model. Figure 5-2 presented the

relationships between the components of the socio-technical system in the form of the Leavitt Diamond. The findings of the research have identified that the decisions by the organisation in regards to the ITIL implementation determine the effect on the organisation and the subsequent actions to be undertaken. Table 4-79 presented in tabular form the relationship between the STS components. An organisation implementing ITIL has decisions regarding the use of a new or an existing tool, changes to the organisation structure with new roles and training requirements. This research has identified the implication of the choices made. New processes will require alignment with the tool and a requirement for training. A new tool results in a need for training whereas using an existing tool may not. The ITIL implementation requires new roles to manage the process, resulting in a training requirement for the management of the processes and the fulfilment of the roles.

Training has been identified as a requirement for process, tool and for new roles. Issues may occur with specific emphasis on resistance to change. The issues may occur as a result of the new processes, the new tool or the new roles. The issues to manage and overcome and the actions and tasks to be performed can be anticipated in advance based upon the findings of this research and also the application of organisational change strategies.

With the lack of research on ITIL implementation there was not a clear recognition of the outcome of choices made when implementing ITIL. This research has identified the relationships such that it can be identified that there will be a requirement or a preferred action as a consequence of another action or choice. No previous ITIL research has considered the specific actions or tasks that are undertaken in an ITIL implementation and identified what will happen or will need to happen to contribute to the success of the organisational change.

6.3.5 ITIL STS Organisational Change Model

The relationships between the STS components have been referred to in § 6.3.4 and the balancing of the Leavitt Diamond in §6.3.3. The nature of the relationships between STS components has been identified as knowledge that had not previously been identified. The ITIL STS Organisational Change Model adds to the knowledge associated with the relationships between STS components. Based upon the

relationships between the STS components and the decisions made by organisations when implementing ITIL, the outcomes and subsequent actions required may be predicted. Figure 5-3 presents an STS model based upon the ITIL implementations researched. The model presents the actions taken in response to the decisions made in regards to the needs of the organisations. The model displays the STS components with the requirements of the ITIL implementation and the effect on the other STS components. Table 5-3 presents a high level plan for implementing ITIL based upon the ITIL STS Organisational Change Model.

Previous research does not include the relationships between STS components in an ITIL implementation. This research applies the findings of §5.5.2 and §5.5.1, the Balance of the Leavitt Model and the Relationships between STS components, to create a model of organisational change, based on an STS approach, which is applicable to ITIL implementations. Prior research has not identified the relationships between STS components, the effects of decisions on the STS components and the actions to be taken to result in a balanced Leavitt Diamond and successful ITIL implementation.

6.4 Contribution to Practice

This research contributes to practice by providing organisational change strategies that may improve the success rate of ITIL implementations. There are increasing signs that ITIL will be deployed by more organisations around the world in increasing numbers (Iden & Langeland 2010; Pollard & Cater-Steel 2009). In particular the growth of e-business is increasing the dependence on IT with ITSM considered a strategy to align IT and the business (Huang et al. 2013).

Implementing ITIL has a major impact to an organisation and requires new skills and new organisation structures (Iden & Langeland 2010). The implementation may be disruptive to an organisation with conflicts over costs (Shang & Shu-Fang 2010). Implementing ITSM may be very costly (Huang et al. 2013; Tan et al. 2009) with a necessity for business process changes to meet organisational requirements. The implementation can carry significant risk of failure (Tan et al. 2009).

Chapter 6 - Conclusion

There has been very little academic research into the adoption of ITIL even though there is not a clearly defined implementation strategy and at least one review has identified that there is a concern with the unsatisfactory success rate of implementations. Poor planning of an ITIL implementation is likely to result in unsuccessful implementation. ITIL literature does not provide implementation strategies (Pollard & Cater-Steel 2009) but the most recent version of ITIL, ITIL 2011, does refer to Kotter's approach to organisational change (Axelos 2011a, 2011b). Implementing ITIL requires an organisational change included in the change management process (Tan et al. 2009) and there has been a need identified to research organisational change factors that influence the success of an implementation (Pollard & Cater-Steel 2009).

This research presented eight case studies of ITIL implementations by different organisations. The organisations that participated in the case studies vary in terms of size and industry. The organisations implemented a variety of ITIL processes. The research can be considered in the context of the individual case studies or as an overall strategy for implementing ITIL. Organisations planning an ITIL implementation may identify with one of the case studies and apply a similar strategy. Alternatively organisations may consider the findings collectively and apply strategies based on a number of the cases. The findings of the research identified that the organisations, regardless of ITIL implementation scope, or organisational type, size or industry applied very similar strategies.

The multi-case study approach to this research presents strategies that have been adopted by organisations that have successfully implemented ITIL. This is important information for organisations that are considering implementing ITIL. The implication for ITIL practitioners is that this research provides a set of organisational change strategies, types and approaches that have been applied to successful ITIL implementations. The organisational change strategies can be considered as models for other organisations that are planning an ITIL implementation. This is new information that is available for organisations and ITIL practitioners.

Key points of organisational change are identified by this research that may assist organisations planning an ITIL implementation. The points include the

organisational change strategies, the STS approach to the ITIL implementation and the ITIL STS Organisational Change Model.

6.4.1 Organisational Change Strategies

The research presents organisational change strategies including type and approach. The strategies included planned change resulting from proactive needs. ITIL is implemented as phased change in a punctuated equilibrium model. The change has been applied as revolutionary change with the exception of an organisation that had existing ITIL processes in place. The similarity of the organisational change strategies provides organisations planning ITIL implementations with models that may be considered and adopted.

This research identified however, that the organisations did not deliberately apply any organisational change strategy. Two organisations did refer to Kotter's organisational change strategy but did not apply it. By identifying the strategies applied, this research provides organisations that are considering implementing ITIL with a model to follow. Leaders of ITIL implementations are able to review this research and to consider that the ITIL implementation should be conducted under a selected organisational change strategy. This research provides practitioners with organisational change strategies that have been applied to successful ITIL implementations. Particularly relevant to practitioners is that a planned phased approach was consistently undertaken. ITIL practitioners are likely to be familiar with the Kotter organisational change strategy documented in the ITIL texts. It is probable that the ITIL practitioners are unaware that the Kotter strategy is an emergent change model. This research has identified, for practitioners, that a planned change approach has been applied successfully. Additionally, the research identifies that ITIL does not need to be deployed all at once as in a big-bang approach but can be deployed in a phased approach. That is, processes can be implemented over time to suit the needs of the organisation.

For the first time ITIL practitioners can consider organisational change strategies in relation to successful ITIL implementations. As no previous research had been conducted previously in this area the findings of the research provide a direction for organisational change strategies that can be applied when implementing ITIL

6.4.2 STS Approach to Implementing ITIL

This research applied the lens of an STS approach to implementing ITIL by the organisations. The STS approach identified in this research provides organisations planning an ITIL implementation with a model of organisational change that considers the four components of the organisation of process, technology, people and organisational structure. The application of a Leavitt Diamond to the planning of an ITIL implementation may assist the organisation addressing various components of the organisational change that are not identified in the strategies identified in the first point.

The identification of organisational change strategies that have been applied to successful ITIL implementations may improve the success rate of ITIL implementations. Organisations will therefore not expend costs on implementation strategies that are unsuccessful and will benefit from the anticipated service improvements that ITIL is expected to provide.

Prior to this research there had been recognition that an STS to approach to implementing ERP and BPR may influence positive outcomes (Galliers & Baker 1995). This research identified that no specific organisational change strategy had been applied to the ITIL implementations. There had not been previous research into the organisational change strategies applicable for an ITIL implementation. Similarly, with no previous research into an STS approach to implementing ITIL practitioners did not have the relevance of this strategy available to them. The research into the STS approach to the implementations of ERP and BPR may not be known to those implementing ITIL. Certainly, an STS approach was not referred to at all by any participating interviewees. As a consequence of this research therefore ITIL practitioners now have information regarding an STS approach that can be applied to future ITIL implementations.

The finding that the STS approach was applied, although not deliberately, to the ITIL implementations provides an extra component to the organisational change strategies already referred to in §6.4.1. ITIL practitioners may consider an organisational change strategy that includes a planned change approach with a phased implementation and with an STS approach. ITIL practitioners, as a result of this

research, have strategies available to them that they may apply when implementing ITIL.

6.4.3 ITIL STS Organisational Change Model

This research identified that ITIL implementations have similarities in regards to organisational change strategies and approaches. Additionally the ITIL implementation consists of specific requirements resulting in predictable actions. The ITIL STS Organisational Change Model described in §6.4.3 presents a model of organisational change based upon this research that can be applied to ITIL implementations. Previous research has not been conducted into organisational change strategies associated with ITIL implementations. The ITIL STS Organisational Change Model presents a high level plan that organisations can apply to the ITIL implementation. An organisational change strategy provides a high level overview of the decisions to be made and the options available has not been presented previously. ITIL practitioners have not had information previously that can be applied to ITIL implementations that provides information on the actions to be taken and the decisions to be made.

Figure 5-3 presented an STS model of the ITIL implementation and Table 5-3 presented the STS components, the requirements for the ITIL implementation, the initial actions required and the subsequent or secondary actions to be considered. The ITIL STS Organisational Change Model is based upon the experiences of eight organisations that have implemented ITIL successfully. ITIL practitioners implementing or considering the implementation of ITIL can apply this model. This is particularly of relevance to organisations that have no prior experience implementing ITIL.

In conjunction with the identification of organisational change approaches, planned change and phased approach and the STS approach this research presents the ITIL STS Organisational Change Model to practitioners. ITIL practitioners are consequently provided with a model of change that provides the key decision points, the actions and the subsequent actions that if followed will provide an STS approach. Previous research has not provided this information to benefit organisations planning to implement ITIL.

In further support of the STS approach to the ITIL implementation, the ITIL STS Organisational Change Model, Figure 5-3, and the High Level Plan for Implementing ITIL, Table 5-3, a three stage approach to implementing Information Systems is considered to provide benefit to the planning of an ITIL implementation. Bostrom and Heinen (1977) described the three stage approach as presented in Table 2-14. The three stage approach could be applied to implementing ITIL with the first stage identifying the ITSM project goals and responsibilities. The second stage would be applied to the design of the ITIL requirements and include the social and technical STS components. The third stage requires the management of the ITIL service to ensure it meets requirements (Bostrom & Heinen 1977). The third stage could be considered the ITIL process of Continual Service Improvement. The three stage approach ensures that both the social and technical STS components receive focus in the ITIL implementation (Bostrom & Heinen 1977).

This research therefore provides to practitioners a model of change, the ITIL STS Organisational Change Model, which can be aligned implemented with a three stage approach and in accordance with the other research findings of a planned change with a phased implementation. For the first time practitioners have the information to develop strategies for the ITIL implementation based upon this research and in alignment with previous research.

6.5 Limitations of the Research

This section discusses the limitations of this research. The primary limitation of the research is that an unsuccessful ITIL implementation was not included. All organisations identified their ITIL implementations as successful. A lack of an unsuccessful ITIL implementation prevented a comparison of the organisational change strategies of a successful and an unsuccessful implementation. The research therefore identifies strategies that were applied to successful ITIL implementations. Organisational change strategies that were applied by organisations successfully implementing ITIL is knowledge that has not previously been identified. However, the findings would have been enhanced had an unsuccessful ITIL implementation been included in the research. This would have enabled a consideration of possible differences in the organisational change strategies for

successful and unsuccessful ITIL implementations. At the time of the recruitment of participants in the case studies the organisations were not requested to divulge if their ITIL implementation was successful or unsuccessful. As the measure of success was included in the interview questions it was considered not appropriate to the research to ask this question outside of the interview.

It is possible that the participants in the interviews did not wish to advise that the ITIL implementation was unsuccessful. The high rate of ITIL implementations not meeting expectations is documented in the literature review. It was anticipated that of eight case studies at least one organisation would have implemented ITIL unsuccessfully. The interviewees may not have wanted to admit that the ITIL implementation did not meet expectations. It may be considered that the interviewees did not honestly answer the questions relating to success or that they were not informed sufficiently to provide an appropriate response. This is conjecture only. It is possible that each case study was successful and that all questions were responded to as honestly and as appropriately as possible. It is also possible that organisations that were not successful with an ITIL implementation may not agree to participate.

Consequently comparing the organisational change strategies of successful and unsuccessful ITIL implementations may be a difficult research requirement to fulfil.

A further limitation of the research is the measurement of success of the ITIL implementation. A consistent success measure has not been identified. The ten criteria for success applied in this research were initially documented by Pollard and Cater-Steel (2009) as benefits of an ITIL alignment reported in previous research. In the absence of other criteria the ten benefits were applied to this research. The possibility exists that the criteria may be interpreted differently by the interviewees. Additionally the criteria are subjective. The responses are based upon the interpretation of the question by the interviewee and the perception of the meeting of the criteria. A measure that demonstrates that the criteria have either been met, or not met, does not exist. An example includes the criteria of seamless end to end service. A seamless end to end service has not been defined and a measure is not available. One interviewee declined to respond to the question because a measure for meeting the criteria had not been determined. Three organisations responded that the

requirement was partially met. Although the responses were accepted it is not clear if the interviewees equally interpreted the requirements for meeting the criteria. The interviewees were not required to provide supporting evidence of the meeting of the criteria. It is a limitation of this research that measurable criteria for the success of an ITIL implementation do not exist.

6.6 Recommendations

This section provides recommendations based upon the research in regards to practice, the distribution of the research findings and for further research.

6.6.1 Recommendations for Practice

On the basis of the findings of this research the following proposals are provided in regards to practice, distribution of the research findings and further research.

6.6.1.1 Organisational Change Strategy

The findings of the research lead to the recommendation that organisations planning for an ITIL implementation should apply an organisational change strategy of planned change. The planned change approach should also consider the additional strategy of a phased implementation. The further recommendation is provided that organisations consider implementing ITIL to improve IT services as proactive change rather than waiting for an event or requirement that necessitates reactive change. Table 5-1 presented the organisational change strategies applied by the eight organisations. The eight organisations successfully implemented ITIL and although each organisation did not deliberately identify an organisational change strategy, the strategies adopted were conducted as planned change. The ITIL published books recommend the organisational change strategies of John Kotter for an ITIL implementation (Axelos 2011a, 2011b). Kotter's theory is classified as an emergent change model and was not been applied by any of the organisations. The planned change strategy is also supported by the literature regarding the implementation of other Socio-Technical Systems such as ERP and BPR.

6.6.1.2 STS Approach to Organisational Change

The findings of the research, in conjunction with the first recommendation, lead to the second proposal that organisations implementing ITIL apply an STS approach to organisational change. The research has identified that each of the organisations successfully implemented ITIL with the unknowing adoption of an STS approach to organisational change. Applying an STS strategy was not a deliberate strategy applied by the organisations. However, each organisation's ITIL implementation was successful and each applied an STS approach. The STS approach to organisational change has been considered appropriate for the implementation of the socio-technical systems of ERP and BPR also. Supported by the findings from this research and prior research, including that on ERP and BPR, an STS approach has been applied to successful implementations.

The requirement for the STS approach is that focus is applied to each of the STS components. This research has identified that the focus does not need to be equal but does need to be appropriate to meet the requirements of the organisational change. Applying an STS approach to an ITIL implementation will ensure that the organisation considers the requirements for each of the STS components.

6.6.1.3 ITIL STS Organisational Change Model

The further recommendation is made the organisations implementing ITIL apply the ITIL STS Organisational Change Model presented in Figure 5-3 and supported by the high level plan presented in Table 5-3. The model presents the key requirements of an ITIL implementation and the actions required to achieve them based upon the eight case studies. It is recommended that an organisation that is planning an ITIL implementation apply the ITIL STS Organisational Change Model to identify the requirements and ensure that the implications to the relationships between the STS components are addressed and maintained. The model presents to ITIL practitioners the findings of successful ITIL implementations. The ITIL practitioner will have at least a high level model to consider when planning the ITIL implementation.

The additional recommendation is provided, in conjunction with the ITIL STS Organisational Change Model, that the three stage approach of Bostrom and Heinen (1977) is applied. The three stage approach to implementing information systems includes a first stage of identifying the ITSM project goals and responsibilities. The second stage would be applied to the design of the ITIL requirements but including the social and technical STS components. The third stage requires the management of the ITIL service to ensure it meets requirements (Bostrom & Heinen 1977). The third stage could be considered the ITIL process of Continual Service Improvement. The three stage approach ensures that both the social and technical STS components receive focus in the ITIL implementation (Bostrom & Heinen 1977).

6.6.1.4 Organisational Change Management Education for University IT Students

A recommendation resulting from this research is to introduce organisational change management programs into University Information Technology courses. It is evident from the eight case studies that organisational change management strategies or models were not selected. IT professionals may not have the skills or knowledge necessary for major projects requiring significant change.

The participants in the interviews were key personnel in the ITIL implementations. It is apparent that they did not have knowledge in regards to organisational change management and it seems likely that team members also did not. It was evident during the interviews that organisational change management strategies were not selected and that participants had no knowledge of them.

Implementing ITIL is one program that affects an organisation and would benefit from organisational change strategies. The research also considered similar socio-technical systems such as ERP and BPR. The implementation of ERP and BPR are also requiring of significant organisational change. The IT professionals that contribute to these programs will also benefit from the knowledge of organisational change management. The implementation of large IT systems generally will have an impact on the organisation. Understanding organisational change management and strategies could be considered as a competency that will benefit the programs and the organisation. The key outcome of IT professionals that understand organisational

change management is that the success rate of the implementation programs may be increased and the organisation may operate more cost effectively. This recommendation may result in more successful IT implementation programs.

6.6.1.5 Alignment of ITIL Roles with the Skills Framework for the Information Age

The structure component of the socio-technical system refers to roles and positions as displayed in the ITIL STS Organisational Change Model depicted in Figure 5-3. To ensure that the appropriate skills are identified for the roles it is recommended that organisations implementing ITIL refer to the Skills Framework for the Information Age (SFIA). The SFIA provides descriptions of skills required for jobs in the ICT industry. The framework is structured in multiple levels according to responsibility with each level including a detailed definition. The intention of SFIA is to provide for management a tool that assists benchmarking of roles, recruitment of the skilled staff and management of the ICT staff. Recognition is provided that the ICT industry is comprised of a combination of knowledge and skills (Nachayapat 2015). The SFIA Foundation, the not-for-profit organisation that oversees SFIA, advise that SFIA supports the skills management cycle including the planning of resources, the deployment of resource and also development and remuneration (SFIA 2016).

The purpose of the recommendation that the SFIA framework is applied to ITIL implementations is that it will result in identification of the skills requirements necessary for the ITIL roles. The further result is that training requirements can be identified to ensure that occupiers of the roles have the necessary skills. The research identified that only Organisation D already had an existing ITIL based IT Service management. Consequently all other organisations, as displayed in Table 4-71, implemented new roles. SFIA would support the establishment of the new roles by assisting with the identification of the necessary skills.

6.6.2 Recommendations for Distribution of Practice Findings

It is the intention of the researcher that the findings of the research will be communicated to organisations and people that will benefit from the knowledge. The information will be provided in a number of ways.

6.6.2.1 itSMFA

The itSMFA supported this research by assisting with the identification of organisations that may participate. The itSMFA support was provided with the expectation that the results would be communicated to members. This will occur through the distribution of the findings to the itSMFA. The findings will be available to members in the form of articles and papers. Additionally a paper presenting the findings will be submitted for the selection process for the itSMFA national conference to be held in August 2016. The research findings will also be presented at a quarterly seminar of the South Australian Chapter of the itSMFA. A mobile phone application and internet site provide access to the seminar presentations to all itSMFA members across Australia. As a consequence the research findings will be therefore available to a much wider audience.

A presentation by the researcher to the 2012 itSMFA National Conference discussed the importance of the people component of the STS model. The presentation was based upon the research in progress. The itSMFA will support the distribution of the findings to ITSM professionals throughout Australia. It is also anticipated that the itSMFA will share the information with the global chapters of the itSMF.

6.6.2.2 Academic Articles and Conferences

The researcher also intends to provide the findings through academic channels. This includes academic journals and conferences. A Work in Progress paper was submitted and selected for the Australasian Conference of Information Systems held in Auckland in 2014. The submitted paper was subsequently published. The findings of the research will provide the source for academic articles to be submitted to top-tier journals. It is anticipated that the distribution of the findings in the academic environment will initiate further research that will continue to contribute to practice.

6.6.2.3 ITIL Literature

As identified by Pollard and Cater-Steel (2009) the official ITIL books do not include information as to how ITIL should be implemented. The researcher will contact Axelos, the publisher of the ITIL literature and owner of the ITIL copyright and provide the findings of the research. The intention is that Axelos may consider

including in the ITIL publications the organisational change strategies identified in this research. This will assist ITSM professionals by providing the practical findings of the research that may be applied to support ITIL implementations. Additionally the ITIL publications refer to the Kotter model of change. The Kotter approach to organisational change management is discussed by Burnes (2004a) as emergent change. The findings of this research identify that a planned change model with a socio-technical systems approach was successfully applied by all case studies. The ITIL books recommend the Kotter approach to organisational change (Axelos 2011a, 2011b). This finding contradicts the information provided in the ITIL publications and presents an alternative organisational change management for ITIL implementations that could be considered.

6.6.3 Recommendations for Further Research

This section will consider possibilities for future research resulting from this research. This research into the organisational change strategies that organisations applied when implementing ITIL addressed a gap in research. There had been no previous research into the organisational change strategies that were being used when implementing ITIL. This research identified certain strategies that were being applied. However, this research sample was limited to eight case studies. This area of research would benefit from additional research with a larger sample.

6.6.3.1 Organisations that Applied Organisational Change Management Strategies

It is evident from this research that there is a similarity in the organisational change management strategies applied. This research identified that the organisations did not deliberately adopt a set strategy and yet there are significant similarities. Future research could include organisations that knowingly selected organisational change management strategies and compare the results with this research. Research that included organisations that had deliberately adopted organisational change strategies would provide the opportunity to identify if similar or contrasting organisational change strategies were adopted and if outcomes were successful or unsuccessful.

6.6.3.2 Unsuccessful ITIL Implementations

Future research should also include a failed ITIL implementation. This research did not include a failed ITIL implementation and this limited the strength of the findings. The research findings provided in this paper and the contribution to practice and knowledge would benefit from similar research that included a failed ITIL implementation. The findings of this research should be tested against an ITIL implementation that failed. It would benefit knowledge and practice to understand if a failed ITIL implementation applied different organisational change strategies. The recommended research that includes a failed ITIL implementation would provide also a contrasting view if similar organisational change strategies were applied and the ITIL implementation was unsuccessful. The findings from research that included an unsuccessful ITIL implementation would provide benefits to knowledge and practice.

6.6.3.3 A Measure for Success of an ITIL Implementation

A critical component of the research is based upon the success of the ITIL implementation yet there is not a definitive measure of success. The criteria used for this research is very subjective and not based upon specific measures. The measure of success is based upon the knowledge of the interviewee of the program and the interpretation of the criteria. Essentially the success of the ITIL implementation is based upon the interviewee advising that it is successful. A measure of the success of the ITIL implementation provides benefits. The ability to measure success will support further ITIL implementation research. Understanding if an ITIL implementation is successful or unsuccessful is relevant if theories are to be developed. Research on success measures for IT projects has considered success-based criteria such as meeting budget, schedule and requirements.

Future research in the area of organisational change will benefit from supported measures regarding success. This may include degrees of success or the ability to measure success in some respects and unsuccessful in others. Included in the gaps in the literature was reference to the lack of success criteria for ITIL implementations. Also identified were issues with measuring the success of IT projects in general. Pollard and Cater-Steel (2009) described a series of benefits obtained from the

implementation of ITIL and these were applied as a criteria for success for this research. Existing research into the success measures for IT projects recognises that the inadequate specification of the project requirements may result in an IT project that meets requirements but is not a useful service (Lech 2013). Measuring IT project success has been identified previously as with issues. Researchers have tried to identify how IT projects should be managed but one issue identified is the measure applied to success (Eveleens & Verhoef 2010). Measuring the success of an ITIL implementation therefore is not in isolation in the context of IT projects. However, there remains a need to provide further research in this area. In practice an organisation should be able to determine if the ITIL implementation has been successful. This will enable an organisation to understand if it has met the needs or identify areas that need to be addressed. Without measurable criteria for success an organisation is basing the results of the ITIL implementation on the perceptions of those involved. The ITIL implementation may involve considerable cost without an understanding of whether the benefits of the cost have been realised. Identifying criteria to measure the success of an ITIL implementation will also benefit future research that can be based upon a consistent evaluation of the ITIL implementation meeting requirements.

6.6.3.4 Research Approaches

This research was conducted as multiple case studies. It is recommended that future research is conducted applying different strategies. The recommended strategies include a quantitative approach and a longitudinal qualitative approach.

Quantitative Survey Approach

As stated a limitation of this research is that an unsuccessful ITIL implementation was not included in the case studies. The sample of eight case studies selected for this research was not in itself a limitation but it did not include an unsuccessful ITIL implementation. Despite the assurance of anonymity it is possible that potential participants in this research chose not to be involved because there was not a willingness to acknowledge to the researcher that the implementation was not successful. A quantitative approach using a survey for data collection is a recommended direction for future research. A survey may overcome the issue of a

participant not wishing to acknowledge the failure of an ITIL implementation. The responses would be based on surveys that are responded to anonymously. It is a possibility that the responders will provide honest answers in regards to the success of the ITIL implementation if there is recognition that the organisation is not known and the data is not collected face to face. Additionally a survey approach enables a much larger sample of organisations and provides a cost effective method of achieving a larger sample (Saunders et al. 2009). A larger sample would provide additional opportunity to develop an understanding of the organisational change strategies. Additional data could be obtained from additional ITIL implementations. This research undertaken required considerable time spent in interviews and arranging interviews as well as travel throughout Australia. The ability to distribute questionnaires enables a much larger sample for less effort and an increase in data to be analysed.

Longitudinal Case Study

A longitudinal case study approach has been applied to research into CSFs for ITIL implementations (Iden & Langeland 2010) and is recommended as a future research direction for organisational change strategies when implementing ITIL. This research was conducted as a cross sectional study resulting in data collected at a specific time in the ITIL implementation. The longitudinal approach to a study of an ITIL implementation will enable an observation of and data collection of the development of the ITIL implementation. The longitudinal research approach provides the ability to monitor changes over time (Saunders et al. 2009). A longitudinal approach would be particularly beneficial to the research as it would enable the observation of the organisation making choices that affect the variables of the STS components and the inter-related secondary effects. The organisation could be observed addressing the requirements of the ITIL implementation and managing barriers and people issues as well as implementing processes, roles and tools.

This research did not include subsequent reviews of the ITIL implementations performed. It is not known if the ITIL services within the organisations continued to be considered successful or if further adjustments were made to correct deficiencies. The longitudinal approach to the research would enable the collection of data over a

longer period with the collection including changes to the ITIL implementations to meet organisational requirements or changing situations.

6.7 Chapter Summary

This research identified organisational change strategies that organisations are using to implement ITIL. This research also identified the relationships between the STS components when ITIL is implemented resulting in an ITIL STS Organisational Change Model. This research identified that eight organisations successfully implementing ITIL had unknowingly adopted similar organisational change strategies with an STS approach although no specific organisational change strategy had been deliberately adopted. This research provided insights into the implementation of ITIL that had not previously been known.

Prior to this research there was a lack of understanding in regards to the organisational change strategies being used to implement ITIL. Research could not found that considered an STS approach to the implementation of ITIL. There had been little research conducted prior to this research that considered organisational change strategies As a result of this research knowledge relating to organisational change and ITIL implementations has been increased. Additionally ITIL practitioners may apply the findings of this research when considering organisational change strategies when implementing ITIL.

The objectives of this research have been achieved. There is now an improved understanding of the organisational change strategies used by organisations when implementing ITIL. The ITIL STS Organisational Change Model based upon the relationships between STS components and the influence on the success of the ITIL implementations provides practitioners with real plan for the implementation of ITIL to aid in achieving successful outcomes.

Acknowledgements

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Appendices

Appendix A1. Questions for Case Study Interviews

Questions for Case Study Interviews

Organisation

Overview

Information about enterprise / IT department.

- Organisation name
- Branch
- # of employees
- Number of computer screens/PCs
- When did you start implementing ITIL?
- In terms of implementation, which ITIL process is the most advanced? % implementation completed?
- Start date for this ITIL process project?
- End date for this ITIL process project?

Initial situation

- What was the strategic focus of the enterprise?
- What was the strategic direction of the IT area?
- Before ITIL was introduced, how were processes in the IT area defined?
  - Perhaps examples
- What systems were used to support IT Service management?
  - Help desk? Configuration management? Asset register?
- Were there problems with the existing processes and systems?
  - Perhaps examples

ITIL project

Success / Unsuccessful

- Do you consider the ITIL implementation to have been successful or unsuccessful?
- Did the ITIL implementation achieve your expectations?
  - If Not, Why not?
- Has the ITIL implementation resulted in:

- A more predictable infrastructure from improved rigour during system changes
- Improved clarity in roles and responsibilities
- Reduction in system and service outages
- Improved coordination between functional teams
- Seamless end-to-end service
- More documented and consistent ITSM processes across the organisation
- Consistent logging of incidents
- Enhanced productivity
- Reduced costs
- Improved customer satisfaction

Implementation

- Who initiated the project? Was there senior management support/commitment?
- How was the project team composed?
- How long did the project last?

Organisational Change

Organisational Change Strategies

- Is the ITIL implementation an organisational change as part of an overall change strategy or is it independent of other changes?
- Describe the roadmap for implementation (e.g. training, single or multiple ITIL processes, reviews).
- Were external consultants or vendors involved? To what extent? Successfully?
- What organisational change strategies were employed to implement ITIL?
    - Did you use a specific organisational change model?
- What steps of an organisational change strategy did you apply during the implementation?
- What role did the staff have in determining or participating in the organisational change strategies?

Socio-technical / Leavitt Diamond Balance

Tool / technology

- What tools and technology were selected for the implementation?
- Describe the system architecture. Which systems support the processes in use?
- What steps were carried out in implementing the tools?
- What difficulties were encountered during the implementation of the tools? How were they resolved?

Process

- What processes were selected for the implementation?
- What steps were carried out in implementing the ITIL process
- How do processes interface with other processes?
- How closely aligned are the processes to the ITIL guidelines?
- What difficulties were encountered during the implementation of the processes? How were they resolved?

Organisational Structure

- Have there been changes to the organisation structure?
  - o What changes were made to the organisational structure, authority roles?
- What steps were carried out in implementing the organisational structure and new roles?
- What difficulties were encountered during the implementation of the organisational structure?
  - o How were they resolved?

People / Skills

- What was the impact on the employees involved? (different tasks?)
- What involvement did the employees have in participating in the organisational changes?
- What activities did the organisation undertake to address the employee concerns and human aspects of the changes?
- Did the organisation undertake any actions to change the culture of the organisation?
  - o What steps did they take?
- What training was provided to introduce the new skills required for ITIL?
  - o Who received the training?
- What steps were carried out in implementing the training / skills?
- What were the consequences of staff coping with the ITIL project as well as their usual duties?
- What difficulties were encountered during the implementation of the organisational structure?

- o How were they resolved?

Balance of Leavitt Diamond

- Was an equal effort applied across Tool / Process / Organisational Structure / People & Skills
- If not where was the most effort applied?
- What order of effort was applied to
  - o Tool / Technology
  - o Process
  - o Organisational Structure
  - o People & Skills

Current Situation

- What is the value of ascertained benefits (e.g., reduction in costs, shortening of processing time)?
- Has competitive advantage been achieved from the ITSM initiative?
- What sort of feedback has been received from the user / customer?
- Which single IT services management process implemented to date is the most effective?

Future Plans

- What other developments are planned in regards to IT service management?
- What is considered the most important future requirement?

Time Permitting

Critical successful factors

- What difficulties were encountered during the project? How were they resolved?

- From your view, what are the critical successful factors of such projects and why? Post - Implementation
- What experiences and knowledge you gained from the implementation of the ITIL project and the conversion of the ITIL processes?
- In what ways have the ITSM processes changed? (examples of new processes)

Competitive Challenges

- What challenges were being faced by the organisation at the time it was decided to implement ITIL?
- What challenges were being faced by the IT area at the time?
- Did this provide a trigger for the ITIL introduction?

Purposes and decision

- Who made the decision to introduce ITIL?
- What were the motives for the decision?
- What were the objectives for introducing ITIL?

Appendix A2. Approach Email to Potential Pilot Case Participants

Xxxxxx,

It was mentioned to me recently that you managed the implementation of ITIL at xx xxxxx xxxxx. You may not be aware that I am a PhD student conducting research into the implementation of ITIL. The purpose of the email is that I am looking for people and organisations that have recently implemented ITIL to assist me with my research. Consequently I am wondering if you may be able to assist me. The research that I am conducting is important in that it has an objective of identifying strategies that may be applied to improve the success rate of ITIL implementations.

The information that I have regarding your involvement in the ITIL implementation is from sources not fully clear on your role but they were of the belief that you did drive the program. If my information is correct then it is very possible that you may be able to assist me. The extent of the assistance would be a one hour interview based upon a series of pre-determined questions. I am bound by strict human ethics requirements and all information that you may provide is confidential. Your name and the name of the organisation you refer to is not identified.

My query then is if you were responsible for the implementation of ITIL at xx xxxxx xxxxxx and if so would you be willing to consider assisting? Would it be possible to discuss this with you?

I would very much appreciate it if you could respond and perhaps provide your telephone number so that I could discuss this with you further. I can provide full

details of the questions that I will ask and the outcome of the information that you provide.

Regards

Malcolm Blumberg

Appendix A3. Questions for Pilot Study

Questions for Pilot Study

Organisation

Overview

Information about enterprise / IT department.

- Organisation name
- Branch
- # of employees
- Number of computer screens/PCs
- When did you start implementing ITIL?
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  - o Perhaps examples
- What systems were used to support IT Service management?
  - o Help desk? Configuration management? Asset register?
- Were there problems with the existing processes and systems?

    o   Perhaps examples

ITIL project

Success / Unsuccessful

- Do you consider the ITIL implementation to have been successful or unsuccessful?
- Did the ITIL implementation achieve your expectations?
    - If Not, Why not?

Implementation

- Who initiated the project? Was there senior management support/commitment?
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- How long did the project last?

Organisational Change

Organisational Change Strategies

- Is the ITIL implementation an organisational change as part of an overall change strategy or is it independent of other changes?
- Describe the roadmap for implementation (e.g. training, single or multiple ITIL processes, reviews).
- Were external consultants or vendors involved? To what extent? Successfully?
- What organisational change strategies were employed to implement ITIL?
- Did you use a specific organisational change model?
- Did you and how:
    - Establish a sense of urgency to gain cooperation?

- o Create a strong team to guide the change?
- o Create a vision and develop strategies for achieving that vision?
- o Communicate the change vision to help motivate and coordinate actions?
- o Empower a broad base of people by removing obstacles to the change?
- o Generate short term wins?
- o Consolidate gains and produce more change?
- o Anchor new approaches in the culture
- What role did the staff have in determining or participating in the organisational change strategies?

Socio-technical / Leavitt Diamond Balance

Tool / technology

- What tools and technology were selected for the implementation?
- Describe the system architecture. Which systems support the processes in use?
- What steps were carried out in implementing the tools?
- What difficulties were encountered during the project? How were they resolved?

Process

- What processes were selected for the implementation?
- What steps were carried out in implementing the ITIL process
- How do processes interface with other processes?
- How closely aligned are the processes to the ITIL guidelines?

- What difficulties were encountered during the project? How were they resolved?

Organisational Structure

- Have there been changes to the organisation structure?
- What changes were made to the organisational structure, authority roles?
- What steps were carried out in implementing the organisational structure and new roles?
- What difficulties were encountered during the implementation of the organisational structure?
- How were they resolved?

People / Skills

- What was the impact on the employees involved? (different tasks?)
- What involvement did the employees have in participating in the organisational changes?
- What activities did the organisation undertake to address the employee concerns and human aspects of the changes?
- Did the organisation undertake any actions to change the culture of the organisation?
    o What steps did they take?
- What training was provided to introduce the new skills required for ITIL?
    o Who received the training?
    o What steps were carried out in implementing the training / skills?
- What were the consequences of staff coping with the ITIL project as well as their usual duties?
- What difficulties were encountered during the implementation of the organisational structure?

    o   How were they resolved?

Current Situation

- What is the value of ascertained benefits (e.g., reduction in costs, shortening of processing time)?
- Has competitive advantage been achieved from the ITSM initiative?
- What sort of feedback has been received from the user / customer?
- Which single IT services management process implemented to date is the most effective?

Future Plans

- What other developments are planned in regards to IT service management?
- What is considered the most important future requirement?

Time Permitting

Critical successful factors

- What difficulties were encountered during the project? How were they resolved?
- From your view, what are the critical successful factors of such projects and why? Post - Implementation
- What experiences and knowledge you gained from the implementation of the ITIL project and the conversion of the ITIL processes?
- In what ways have the ITSM processes changed? (examples of new processes)

Competitive Challenges

- What challenges were being faced by the organisation at the time it was decided to implement ITIL?
- What challenges were being faced by the IT area at the time?
- Did this provide a trigger for the ITIL introduction?

Purposes and decision

- Who made the decision to introduce ITIL?
- What were the motives for the decision?
- What were the objectives for introducing ITIL?

Appendix A4. Human Ethics Approval Letter

OFFICE OF RESEARCH AND HIGHER DEGREES
Ethics Committee Support Officer
PHONE (07) 4631 2690 | FAX (07) 4631 1995
EMAIL ethics@usq.edu.au

Friday, 12 October 2012

Dear Malcolm

The USQ Fast Track Human Research Ethics Committee (FTHREC) assessed your application and agreed that your proposal meets the requirements of the *National Statement on Ethical Conduct in Human Research (2007)*. Your project has been endorsed and full ethics approval granted.

Project Title	Implementation of IT Service Management in Australia: Case Studies Focussing On Organisational Change Strategies
Approval no.	**H12REA176**
Expiry date	30.09.2014
FTHREC Decision	**Approved as submitted**

The standard conditions of this approval are:

(a)   conduct the project strictly in accordance with the proposal submitted and granted ethics approval, including any amendments made to the proposal required by the HREC

(b)   advise (email: ethics@usq.edu.au) immediately of any complaints or other issues in relation to the project which may warrant review of the ethical approval of the project

(c)   make submission for approval of amendments to the approved project before implementing such changes

(d)   provide a 'progress report' for approval 30.09.2013

(e)   provide a 'final report' when the project is completed 30.09.2014

(f)   advise in writing if the project has been discontinued.

For   (c)   to   (e)   proformas   are   available   on   the   USQ   ethics   website: http://www.usq.edu.au/research/ethicsbio/human

Please note that failure to comply with the conditions of approval and the *National Statement* may result in withdrawal of approval for the project.

You may now commence your project. I wish you all the best for the conduct of the project.

Leah Baldwin

Ethics Committee Support Officer

Office of Research and Higher Degrees

Appendix A5. Interview Participant Information Sheet

USQ AUSTRALIA	University of Southern Queensland
	he University of Southern Queensland
	Interview Participant Information Sheet

HREC Approval Number: H12REA176

Full Project Title: Implementation of IT Service Management in Australia: Case Studies Focussing On Organisational Change Strategies

Principal Researcher: Assoc. Prof. Aileen Cater-Steel

Student Researcher: Mr. Malcolm Blumberg

Associate Researcher(s): Dr. Wui-Gee Tan

I would like to invite you to take part in this research project. The aim of this research project is:

- To identify the organisational change strategies being employed by organisations that have effected a successful ITIL implementation.

1. Procedures

Participation in this project will involve

- Attending interviews to (a) provide your understanding of the change management strategies that the organisation used when implementing ITIL; and (b) evaluate the success or failure of the ITIL implementation in achieving expectations.
- You are expected to allow 45 minutes to 1 hour for each interview session.
- All information will be kept confidential. Your response will be coded and no information that returns to the university and the project researchers will identify you as the source.
- Your involvement will provide an assessment of your organisation's ITIL implementation.
- There are no identifiable risks for this study since structured interviews will be conducted at your premises at a suitable time for you after obtaining your organisation's and your consent.

2. Voluntary Participation

Participation is entirely voluntary. **If you do not wish to take part you are not obliged to.** If you decide to take part and later change your mind, you are free to withdraw from the project at any stage. Any information already obtained from you will be destroyed.

Your decision whether to take part or not to take part, or to take part and then withdraw, will not affect your relationship with the University of Southern Queensland and/ or with your employer.

Please notify the researcher if you decide to withdraw from this project.

Should you have any queries regarding the progress or conduct of this research, you can contact the principal researcher:

Assoc. Prof. Aileen Cater-Steel
School of Information Systems, Faculty of Business and Law
University of Southern Queensland, Toowoomba QLD 4350
07 4631 1276 email: caterst@usq.edu.au
After Hours: c/- Malcolm Blumberg (Student Researcher): 0413961750

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690
Email: ethics@usq.edu.au

Appendix A6. Interview Consent Form

USQ | University of Southern Queensland

AUSTRALIA

The University of Southern Queensland

Interview Consent Form

HREC Approval Number: **H12REA176**

TO: Interviewees from Organisations:

Full Project Title: Implementation of IT Service Management in Australia: Case Studies Focussing On Organisational Change Strategies

Principal Researcher: Assoc. Prof. Aileen Cater-Steel

Student Researcher: Mr. Malcolm Blumberg

Associate Researcher(s): Dr. Wui-Gee Tan

- ☐ I have read the Participant Information Sheet and the nature and purpose of the research project has been explained to me. I understand and agree to take part.

- ☐ I understand the purpose of the research project and my involvement in it.

- ☐ I understand that I may withdraw from the research project at any stage and that this will not affect my status now or in the future.

- ☐ I confirm that I am over 18 years of age.

- ☐ I understand that while information gained during the study may be published, I will not be identified and my personal results will remain confidential.

- ☐ I understand that I may be audio taped during the study. I understand that the tape will be securely stored in a locked cabinet of the researcher Malcolm Blumberg's home and it will only be accessible to the research team member for the sole purpose of research activities.

Name of participant…………………………………………………………........

Signed…………………………………………………Date……………………….

If you have any ethical concerns with how the research is being conducted or any queries about your rights as a participant please feel free to contact the University of Southern Queensland Ethics Officer on the following details.

Ethics and Research Integrity Officer
Office of Research and Higher Degrees
University of Southern Queensland
West Street, Toowoomba 4350
Ph: +61 7 4631 2690

Email: ***ethics@usq.edu.au***

Appendix A7. Agreement for Support from itSMFA

INFORMED INTELLIGENCE   itSMF AUSTRALIA

*it*SMF Australia Inc
ABN 41 821 213 034
Suite 4
45-51 Ringwood Street
Ringwood Victoria 3134

T   03 9879 5466
F   03 9879 2833
W www.itsmf.org.au

Malcolm Blumberg
USQ Research Project

by email: mandtblumberg@hotmail.com

7th September 2012

Dear Malcolm,

As discussed the IT Service Management Forum Australia (itSMFA) would like to confirm that they are very happy to support your research into Organisational Change Strategies that may influence the success of an ITIL implementation.

ITSMF Australia is willing to make its nationwide network of members and resources available to you to conduct this research and can assist in the identification of those companies that are suitable candidates that would be willing to take part in your research if required. However, as discussed you have already made contact with a number of companies at the recent conference - please let us know if you do need any assistance at any time.

You have advised that the timeframe for this research is as follows:

-     Collection of data 2013
-     Draft report 2014
-     Final report 2015

The results of your research will be available to ITSMFA members in the form of articles during the 3 years and the draft and final reports will be made available as they are completed.

You have also advised that your will be adhering to a strict set of guidelines for conducting the research and that any organisation that assists you will be treated in a manner approved by an ethical standards review board. You will be advising the companies that you interview of your requirements, their rights and the information you will use and publish.

If we can provide any other assistance please let us know.

Thank you and we look forward to seeing the results of your research.

Best Regards

Kathryn Heaton
Chair

Appendix A8. Request for Assistance to the itSMFA

Ms. Xxxxxx,

Tania Evans of the itSMF has provided me with your contact details and advised me that you have agreed for me to contact you. My enquiry is in regards to a programme conducted by xxxxx that has been nominated for an award at the national itSMFA Conference in Canberra. I therefore request that you pass the following message to a representative of xxxxx that may provide consideration.

I am a PhD student at the University of Southern Queensland conducting research into the implementation of ITIL. I am looking for people and organisations that have recently implemented ITIL to assist me with my research. The research that I am conducting is important in that it has an objective of identifying organisational change strategies that may be applied to improve the success rate of ITIL implementations.

My research is conducted as multiple case studies and the information is gathered in interviews that should last for one hour only. I am bound by strict human ethics requirements and all information that you may provide is confidential. Your name and the name of the organisation you refer to is not identified.

As an xxxxx xxxxxxx I believe that the xxxxx project could provide significant benefit to my research and therefore to ITIL implementation knowledge. I would like to make further contact with the desire that I could meet with an xxxxx representative at the itSMFA National Conference in Canberra and conduct an interview as a participant in my research. I can provide additional information.

I will be at the conference from the commencement on the Wednesday until the close on Friday. I would like to make contact by phone at a time that is convenient and arrange to meet. As I stated above I require an hour only of time. Preparation for the interview is not required.

I would appreciate it if you could consider my request.

Regards

Malcolm Blumberg

Appendix A9. Approach Letter to Potential Research Participants

Malcolm Blumberg

xx xxxxxxxx xxxxx,

Adelaide, SA, 0000

Mobile Phone: +61000000000

Email: U1017220@umail.usq.edu.au

25th September 2013

Dear sir / madam

I am a PhD candidate at the University of Southern Queensland conducting research into the implementation of ITIL. I am looking for people and organisations that have implemented ITIL to assist me with my research. I am writing to enquire if Xxxxxxx Xxxxxxxx has implemented ITIL IT Service Management and if so if you would be willing to participate in my research.

The research that I am conducting is important in that it has an objective of identifying organisational change strategies that may be applied to improve the success rate of ITIL implementations.

My research is conducted as multiple case studies and the information is gathered in an interview that should last for one hour only. I am bound by strict human ethics requirements and all information that you may provide is confidential. Your name and the name of the organisation you refer to is not identified. If you do agree to

participate I am required to ensure that you are aware of the ethics requirements before I can start the interview.

If you are able to assist me with my research or if you would like to make enquiries before committing I would very much appreciate it if you could contact me by email. My university email address is below.

U1017220@umail.usq.edu.au

I can provide additional information regarding the questions and the ethics requirements if you wish. Alternatively I can be contacted on my mobile phone.

I would appreciate your consideration of my request. Please do not hesitate in contacting me with any queries that you may have.

Regards

Malcolm Blumberg

Appendix A10. Approach Email to Potential Research Participants

Mr. xxxxxx,

My name is Malcolm Blumberg. I am a PhD candidate at the University of Southern Queensland conducting research into the implementation of ITIL. Your name and email address has been provided to me as a possible contact that may be able to assist me with my research. I would like to thank you firstly for agreeing to receive contact from me.

For the purpose of my research I am looking for people and organisations that have implemented ITIL. I am contacting you to enquire if you and your organisation have implemented ITIL IT Service Management and if so if you would be willing to participate in my research.

The research that I am conducting is important in that it has an objective of identifying organisational change strategies that may be applied to improve the success rate of ITIL implementations.

My research is conducted as multiple case studies and the information is gathered in a face to face interview that should last for one hour only. I live in Adelaide but my intention would be to visit Darwin for the purpose of the interview. The interview would need to be conducted with someone in the organisation that was very familiar with the programme and outcomes. This could include a leader of the ITIL implementation programme or a senior leader in the IT organisation.

I am bound by strict human ethics requirements and all information that you may provide is confidential. Your name and the name of the organisation you refer to is not

identified. If you do agree to participate I am required to ensure that you are aware of the ethics requirements before I can start the interview.

If you are able to assist me with my research or if you would like to make enquiries before committing I would very much appreciate it if you could contact me by reply email. If your organisation is suitable for my research and if you agree to participate I would need also to enter into discussions regarding scheduling so that I could make travel arrangements.

I can provide additional information regarding the questions and the ethics requirements if you wish.

I would appreciate your consideration of my request. Please do not hesitate in contacting me with any queries that you may have.

Regards

Malcolm Blumberg

Appendix A11. Email of Thanks to a Research Participant

Xxxxx,

I would like to thank you for your assistance and cooperation in regards to my ITIL research. The output that I received was excellent and what I was hoping for. It will be very beneficial for my research.

Thank you

Malcolm Blumberg