

BENEFITS REALIZATION FOR IS/IT INVESTMENTS – A PERSPECTIVE FROM ERP SYSTEMS

By

Usman Aslam

A Doctoral Thesis

Submitted in partial fulfillment of the requirements for the award of Doctor of Philosophy of
Loughborough University

March 2014

© Usman Aslam, 2014

Dedicated to my loving grandmother who passed away during this journey

ACKNOWLEDGEMENTS

First of all, I would like to express my gratitude to Almighty Allah for providing me the courage and strength to complete this research.

I am extremely grateful to my supervisors Dr Crispin Coombs and Professor Neil Doherty, both, for their professional and personal support throughout the PhD. Without their feedback and encouragement, it would have been impossible to finish this research project.

I would like to thank Bob Thomas for being a catalyst to conduct this research. Many thanks to case study organizations, as well, for providing me access to the organizational procedures and documents. I extend my gratitude to Bryan Oak and Andy Bailey for being very supportive during this research.

I am also indebted to Mufti Bashir Ahmed for his prayers and encouragement throughout the course of PhD. Special thanks to Shahbaz Chaudhry and Sher Afgan for providing the guidance since my early days. Many Thanks to Dr Amjad Hussain, Dr Zahid Usman, Dr Abhijeet Ghadge and Dr Tariq Masood, as well, for providing the ears to listen whenever I needed.

Last, but not the least, I would like to thank my parents, Muhammad Aslam and Shehnaz Aslam, for their continuous encouragement, love and prayers. It would have been extremely difficult to finish the PhD without their unconditional support. Special thanks to Afifa, Rizwan, Mobeen, Mariam, Saqlain, and, in particular, to Hira for being patient and supportive during the course of PhD.

ABSTRACT

Delivery of benefits from many ERP systems remains disappointingly low. The high investment in ERP systems means that realizing benefits from these implementations is of critical importance to many organizations. Thus, the main aim this research is to develop insights that can help organizations to improve benefits realization from ERP systems. In doing so, this study is not only evaluating the benefits gained by different organizations, but it is also analysing the key activities that are deemed necessary for benefits realization.

This research was conducted in two phases to explore the research objectives. The initial phase was conducted with a selection of stakeholders working in the ERP industry to gather insights concerning the adoption of benefits management approaches and the relationship between ERP customization and benefits realization. The second phase comprised of three in-depth case studies that investigated the activities that were necessary to realize benefits from ERP projects.

The research provides a number of important contributions to the academic literature. With respect to the adoption of benefits management (BM) approaches, this research contributes by providing empirical insights about what organizations are actually doing to manage benefits. More specifically, the study provides evidence to suggest that organizations have an increased chance of realizing benefits if they develop localized BM approaches based on organizational needs and context. This study also highlights the role of organisational change in facilitating the realisation of business benefits, in the context of ERP projects. Another important contribution is an attempt in establishing of relationship between different types of customizations and the resultant benefits. The study also contributes by indicating that organizations, in the very particular context of ERP projects, can identify the additional un-planned benefits during the use of the system. This study makes another important new contribution to the literature, by demonstrating the importance of tackling any organizational inhibitors in order to realize maximum benefits at various stages of ERP systems life cycle. Finally, with respect to the evaluation of ERP systems, this research contributes by providing interpretive evaluation of operational ERP systems to explore the process of how benefits were realised, in the participating organizations. It is envisaged that

interpretive evaluation will fuel the insights that will maximize the attaining of benefits from ERP implementations.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	1
1.1. INTRODUCTION.....	2
1.2. THE DRIVERS OF RESEARCH.....	2
1.3. OBJECTIVES OF RESEARCH.....	5
1.4. OVERALL RESEARCH APPROACH.....	7
1.5. SIGNIFICANCE OF RESEARCH.....	8
1.6. STRUCTURE OF THE THESIS.....	9
CHAPTER 2: LITERATURE REVIEW	12
2.1. INTRODUCTION.....	13
2.2. TYPES OF BENEFITS.....	16
2.3. EVALUATION OF BENEFITS	19
2.4. BENEFITS MANAGEMENT	23
2.4.1. THE MODEL OF BENEFITS IDENTIFICATION	25
2.4.2. ACTIVE BENEFITS REALIZATION	26
2.4.3. THE CRANFIELD PROCESS MODEL	27
2.5. CUSTOMIZATION OF ERP SYSTEMS.....	31
2.6. SUMMARY OF GAPS IN THE EXISTING LITERATURE	39
CHAPTER 3: RESEARCH METHODOLOGY AND DESIGN	42
3.1. INTRODUCTION.....	43
3.2. PHILOSOPHY	43
3.2.1. POSITIVIST PERSPECTIVE.....	43
3.2.2. INTERPRETIVE PERSPECTIVE	45
3.2.3. CRITICAL PERSPECTIVE	46
3.2.4. PHILOSOPHICAL APPROACH FOR THIS PROJECT	47
3.3. RESEARCH METHODOLOGY	48
3.3.1. ACTION RESEARCH.....	51
3.3.2. CASE STUDY APPROACH.....	52
3.3.3. ETHNOGRAPHY.....	52
3.3.4. GROUNDED THEORY.....	53
3.4. RESEARCH DESIGN	54
3.4.1. OBJECTIVES OF RESEARCH:	55
3.4.2. OUTLINED RESEARCH FRAMEWORK.....	56
3.4.3. CHOICE OF ANALYTICAL FRAMEWORK.....	58

3.5.	PHASE 1.....	60
3.6.	PHASE2	60
3.6.1.	COLLECTING EVIDENCE	62
3.6.2.	DESIGN OF THE INTERVIEW GUIDE.....	64
3.6.3.	SAMPLING AND SELECTION OF ORGANIZATIONS.....	65
3.6.4.	EXECUTION OF INTERVIEWS	67
3.6.5.	ANALYZING THE EVIDENCE.....	68
3.7.	SUMMARY.....	70
CHAPTER 4: FINDINGS FROM PHASE 1 – AN EXPLORATORY STUDY		72
4.1.	INTRODUCTION.....	73
4.2.	BACKGROUND FOR EXPLORATORY RESEARCH.....	73
4.3.	METHODOLOGY.....	75
4.3.1.	DESIGN OF INTERVIEW GUIDE	76
4.3.2.	TARGETING THE INTERVIEWEES.....	77
4.3.3.	EXECUTION OF INTERVIEWS	80
4.3.4.	DATA ANALYSIS.....	81
4.4.	FINDINGS FROM PHASE 1	82
4.4.1.	LACK OF FOCUS ON BENEFITS-ORIENTED-APPROACHES.....	83
4.4.2.	BENEFITS REALIZED THROUGH BUSINESS TRANSFORMATION	86
4.4.3.	ORGANIZATIONAL INHIBITORS	88
4.4.4.	NOT ALL BENEFITS ARE PLANNED - EMERGENT BENEFITS	90
4.4.5.	BENEFITS REALIZED THROUGH CUSTOMIZATION.....	92
4.5.	SUMMARY OF EXPLORATORY RESEARCH FINDINGS	95
4.6.	REVISED RESEARCH FRAMEWORK	100
4.6.1.	EMERGENT BENEFITS.....	100
4.6.2.	ORGANIZATIONAL INHIBITORS	101
4.7.	REVISED BENEFITS DEPENDENCY NETWORK (RBDN).....	102
4.8.	CONCLUSION	106
CHAPTER5: EMPIRICAL FINDINGS – ENERGYCO.....		108
5.1.	INTRODUCTION.....	109
5.2.	BACKGROUND FOR ENERGYCO CASE.....	110
5.2.1.	PROJECT1: CUSTOMER SERVICES MANAGEMENT	111
5.2.2.	PROJECT2: BILLING MANAGEMENT	111
5.3.	RESEARCH FINDINGS.....	112

5.3.1.	IS/IT ENABLERS	114
5.3.2.	SYSTEM CUSTOMIZATION	114
5.3.3.	ORGANIZATIONAL INHIBITORS	116
5.3.4.	ENABLING CHANGES.....	118
5.3.5.	BUSINESS CHANGES	120
5.3.6.	PLANNED BENEFITS.....	125
5.3.7.	EMERGENT BENEFITS.....	130
5.3.8.	OBJECTIVES	132
5.4.	SUMMARY OF FINDINGS	133
CHAPTER 6: EMPIRICAL FINDINGS – WATERCo		141
6.1.	INTRODUCTION.....	142
6.2.	BACKGROUND FOR WATERCo CASE	142
6.2.1.	PROJECT1: OPERATIONS MANAGEMENT	143
6.2.2.	PROJECT2: BILLING MANAGEMENT.....	144
6.3.	RESEARCH FINDINGS.....	145
6.3.1.	IS/IT ENABLERS	147
6.3.2.	SYSTEM CUSTOMIZATIONS.....	147
6.3.3.	ORGANIZATIONAL INHIBITORS.....	151
6.3.4.	ENABLING CHANGES.....	153
6.3.5.	BUSINESS CHANGES	154
6.3.6.	PLANNED BENEFITS.....	159
6.3.7.	EMERGENT BENEFITS.....	162
6.3.8.	OBJECTIVES	164
6.4.	SUMMARY OF FINDINGS	166
CHAPTER 7: EMPIRICAL FINDINGS – MANUCo		174
7.1.	INTRODUCTION.....	175
7.2.	BACKGROUND FOR MANUCo CASE	175
7.2.1.	PROJECT1: MANUFACTURING UNIT	176
7.2.2.	PROJECT2: REPAIRS UNIT.....	176
7.3.	FINDINGS FROM MANUCo	177
7.3.1.	IS/IT ENABLERS	179
7.3.2.	SYSTEM CUSTOMIZATIONS.....	179
7.3.3.	ORGANIZATIONAL INHIBITORS.....	181
7.3.4.	ENABLING CHANGES.....	183
7.3.5.	BUSINESS CHANGES	185

7.3.6.	PLANNED BENEFITS	190
7.3.7.	EMERGENT BENEFITS.....	194
7.3.8.	OBJECTIVES	194
7.4.	SUMMARY OF FINDINGS	197
CHAPTER 8: DISCUSSION AND CONCLUSIONS		202
8.1.	INTRODUCTION.....	203
8.2.	PHASE 2: A CROSS-CASE ANALYSIS OF THREE CASE STUDIES.....	203
8.2.1.	ADOPTION OF BENEFITS MANAGEMENT APPROACHES	210
8.2.2.	BENEFITS REALIZATION THROUGH BUSINESS TRANSFORMATION	210
8.2.3.	ORGANIZATIONAL INHIBITORS	214
8.2.4.	EMERGENT BENEFITS.....	217
8.2.5.	BENEFITS THROUGH CUSTOMIZATION	218
8.3.	CONTRIBUTIONS THROUGH RESEARCH FINDINGS.....	221
8.3.1.	CONTRIBUTION 1: ADOPTION OF BENEFITS MANAGEMENT APPROACHES	222
8.3.2.	CONTRIBUTION 2: BENEFITS REALIZATION THROUGH ORGANIZATIONAL CHANGES.....	223
8.3.3.	CONTRIBUTION 3: BENEFITS REALIZATION THROUGH CUSTOMIZATION.....	225
8.3.4.	CONTRIBUTION 4: EMERGENT BENEFITS.....	230
8.3.5.	CONTRIBUTION 5: ORGANIZATIONAL INHIBITORS	230
8.3.6.	CONTRIBUTION 6: EVALUATION OF ERP SYSTEMS.....	232
8.4.	SUMMARY AND CONCLUSIONS	235
8.5.	MANAGERIAL IMPLICATIONS	241
8.6.	LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH	242
REFERENCES.....		245
APPENDICES.....		257
APPENDIX 1: INTERVIEW GUIDE FOR PHASE 1.....		257
APPENDIX 2: CODING STRUCTURE FOR PHASE 1.....		258
APPENDIX 3: AN EXAMPLE OF CODING FOR PHASE 1		259
APPENDIX 4: INTERVIEW GUIDE FOR PHASE 2.....		260
APPENDIX 5: CODING STRUCTURE FOR ENERGYCo		261
APPENDIX 6: AN EXAMPLE OF CODING FOR ENERGYCo		262

LIST OF FIGURES

FIGURE 1.1: THE STRUCTURE OF THE THESIS	11
FIGURE 2.1: AN OUTLINE FOR THE STRUCTURE OF THE LITERATURE REVIEW.....	15
FIGURE 2.2: BENEFITIS DEPENDENCY NETWORK	30
FIGURE 2.3: TYPOLOGIES OF ERP CUSTOMIZATIONS.....	33
FIGURE 3.1: INITIAL RESEARCH FRAMEWORK	58
FIGURE 4.1: REVISED RESEARCH FRAMEWORK	100
FIGURE 4.2: REVISED BENEFITIS DEPENDENCY NETWORK (RBDN).....	105
FIGURE 5.1: RBDN FOR ENERGYCO	113
FIGURE 6.1: RBDN FOR WATERCO.....	146
FIGURE 7.1: RBDN FOR MANUCO	178

LIST OF TABLES

TABLE 2.1: DIFFERENT CATEGORIES OF BENEFITS	118
TABLE 2.2: RATIONALES FOR STANDARD ERP SYSTEM	31
TABLE 2.3: REVISED ERP CUSTOMIZATION TYPOLOGY	36
TABLE 2.4: DIFFERENT REASONS FOR CUSTOMIZING AN ERP SYSTEM	37
TABLE 4.1: INTERVIEWS WITH ERP INDUSTRY STAKEHOLDERS	79
TABLE 5.1: DATA SOURCES FOR ENERGYCO	112
TABLE 6.1: DATA SOURCES FOR WATERCO.....	145
TABLE 7.1: DATA SOURCES FOR MANUCO.....	177
TABLE 8.1: KEY FINDINGS FROM ENERGYCO, WATERCO AND MANUCO	205
TABLE 8.2: BENEFITS THROUGH CUSTOMIZATION IN ENERGYCO, WATERCO AND MANUCO	228

CHAPTER 1: INTRODUCTION

1.1. INTRODUCTION

This chapter provides a brief description of the drivers and the objectives for this research project. The chapter then summarises the research approach and highlights the significance of this project. The chapter concludes by presenting the structure of the remaining chapters.

1.2. THE DRIVERS OF RESEARCH

Information Technology (IT) has become an important and integral part of modern organizations, as it can be used to resolve many pressing business challenges. However, ineffective management of IS/IT projects have led to the waste of precious resources (Fortune and Peters, 2005; Peppard and Ward, 2005). Reports of IT failures over the past 30 years are very high. According to one estimate, by the late 1980s, 70% of IS projects were classified as failures (Doherty et al., 2012). Another study by British Computer Society (BCS, 2004) states that just about 16% of IT projects can be considered as a real success. Hence, it is not surprising that in many organizations, IT investments are viewed as a failure because these investments have been unable to provide good return for organizations (Peppard et al. 2007).

Enterprise Resource Planning (ERP) systems are, for many organizations, the preeminent way of dealing with business problems. These systems were originally developed from the concepts of Material Requirement Planning (MRP) and Manufacturing Requirement Planning (MRP II). Information Systems built on the basis of these two concepts in the 1960-1970s were then used to integrate the activities of production, inventory and accounts

departments (Markus et al., 2000). The scope of these systems evolved over the time and functions of human resource, marketing & sales, and distribution & supply network were also included making these systems support the whole business enterprise. Consequently, the term Enterprise Resource Planning (ERP) was coined by Gartner Group of Stamford, Connecticut, USA in the 1990s to describe these systems (Chen, 2001). Wallace & Kremzar (2002) defined ERP as “An enterprise-wide set of management tools that balances demand and supply, containing the ability to link customers and suppliers into a complete supply chain, employing proven business processes for decision-making, and providing high degrees of cross-functional integration among sales, marketing, manufacturing, operations, logistics, purchasing, finance, new product development, and human resources, thereby enabling people to run their business with high levels of customer service and productivity, and simultaneously lower costs and inventories; and providing the foundation for effective e-commerce“. More recently, ERP systems have evolved as enterprise-wide information systems that integrate all information related to an organization’s business including products, suppliers, customers, employees and financial information (Helo et al., 2008). Typically, an ERP system, within an organisation, will be setup on a single and integrated database to provide visibility for different departments. The departments can, in turn, communicate and share information with each other.

According to AMR Research Group, the Enterprise Resource Planning (ERP) market was likely to expand by 11% in 2011 (Jacobson et al. 2007). Another report by Forrester estimated that the size of ERP market in 2011 will be \$45.5 billion and it is likely to have grown to \$50.3 billion by 2015 (CBR, 2011). Globalization and regulatory compliance are the key elements which lead large organizations to invest heavily in ERP systems. By contrast, in

the Small and Medium Enterprise sector, companies are purchasing new ERP systems to improve their customer services and to penetrate global markets (Jacobson et al., 2007). Companies intend to seek both tangible and intangible benefits when embarking on ERP projects. The most noticeable intangible benefits, which companies seek, are internal integration, improved customer services and improved information & processes. On the other hand, the most significant tangible benefits are achieving cost efficiencies in inventory, personnel and procurement as well as improvements in productivity, cash/order management and overall profitability (Nicolaou, 2004). Achieving these benefits is crucial if the ERP systems are to be perceived as successful. However, when it comes to the benefits realization, ERP systems are no different to other IS/IT investments. While some organizations have achieved a high degree of business improvement from their ERP implementations, there remain many examples of ERP systems failing to realize the full range of benefits identified at the project outset (Barket et al., 2003; Kanaracus, 2010; Scott, 1999; Carr, 2002). Therefore, one of the reasons of conducting this research is to examine the process of benefits realization in ERP projects to understand and account for the apparent variability in the delivered benefits.

Thus, the key driver of this research is to develop insights that can help organizations to improve benefits realization from ERP systems. In doing so, this study is not only evaluating the benefits gained by different organizations, but it is also analysing the key activities that are deemed necessary for benefits realization.

1.3. OBJECTIVES OF RESEARCH

In too many instances, the outcomes from ERP projects disappoint, as in practice, many organization still struggle to realize benefits from their ERP systems. It is widely recognised that the benefits generally stem from the organizational changes conducted alongside the newly implemented IT systems (Peppard and Ward, 2005). However, organizations still focus far more on the delivery of technical artefact, during IT projects, and give less regard to the management of organizational change, which is a vital element of all system development projects (Ahn and Skudlark, 1997; Clegg, 2000; Eason, 2001; Markus, 2004). It has been further explained by Marchand and Peppard (2008), who argue that most benefits don't emerge just from the introduction of new technology; rather they appear from the changes in the way organization conducts its business. It has been argued that one possible mechanism to keep a focus on the improvement in organizational performance is to adopt the formal Benefits Management (BM) program (Ward et al., 1996). Benefits management approaches can facilitate the changes in organizational processes to complement the system functionality in order to improve the performance of business processes (Doherty et al., 2012).

There is a growing recognition that organizations should adopt BM approaches (Peppard et al., 2007). However, in practice, very few organizations are following these approaches (Ashurst et al., 2008). Also, to date there has been very little empirical investigation of what organizations are doing in practice to manage benefits from their IS/IT investments (Doherty et al., 2012).

Evaluating the benefits from IS investments is important because benefits can only be realized if they are measured and managed (Ashurst et al., 2008). A large majority of existing studies have attempted to evaluate the benefits from ERP systems through surveys. While this research is beneficial in identifying the benefits achieved by different organizations, it does not provide any precise information about how different organizations were able to achieve these benefits. Also, this strand of research is assessing the benefits through analytical means i.e. by using different financial ratios and very few of them are measuring the benefits through interpretive methods. Although, it is important to measure the financial performance after the use of ERP systems but looking at the financial aspects only may not yield the full picture. This existing stream of research also does not explain the reasons behind the varying level of success achieved by different organizations.

Customization of an ERP system is very common in contemporary ERP implementations. Previous studies have attempted to establish a connection between customization and benefits (Light, 2005). However, the type of customization and its effect on the benefits are considered in relatively few existing studies. As customization happens at a large scale these days (Panorama Consulting, 2011), it is important to explore the relationship between different types of the customization and the resultant benefits. Understanding this relationship may also improve the benefits realization from the ERP systems.

This research project addresses the (above mentioned) gaps in the existing literature. Based on these gaps, the followings specific objectives have been established to guide this project:

- **Objective 1 [O1]:** To assess the full range of benefits, which may be realized from ERP projects, using interpretative evaluation methods.

- **Objective 2 [O2]:** To explore and understand the approaches that organizations are adopting to manage the benefits that might be leveraged from their ERP investments.
- **Objective 3 [O3]:** To explore and understand the reasons why some organizations may not be adopting and following any explicit benefits management approach in their ERP projects.
- **Objective 4 [O4]:** To further understand the role of organisational change in leveraging benefits from ERP implementations.
- **Objective 5 [O5]:** To understand the role of system customisation in leveraging benefits from ERP implementations.

1.4. OVERALL RESEARCH APPROACH

This research project was conducted in two phases. These phases were undertaken to explore and test the existing theories from the literature, and to explicitly explore the stated research objectives. There follows short overviews of these two phases:

Phase 1:

In phase 1, 22 interviews were conducted with the key stakeholders working within the ERP business. The stakeholders were divided into three groups namely Vendors, System Integrators and Client Organizations. The purpose of interviewing all stakeholders groups was to gain more balanced insights about the research topics on hand. These interviews were used to explore insights about the adoption of benefits management approaches and the relationship between ERP customizations and the benefits realization. Further, the

findings from these interviews were used to refine the research framework which was utilized to conduct three in-depth case studies in phase 2 of this research.

Phase 2:

Three in-depth case studies were conducted in phase 2 to further explore the research issues at hand. The case studies were built on the findings from phase 1. In each case study, the process of benefits realization for two individual projects was explored, in detail. Special attention was given to explore the activities that were necessary to realize the benefits from these projects. This focus was valuable not only to understand the organizational context of these projects but also for analysing the variability in the benefits realization.

1.5. SIGNIFICANCE OF RESEARCH

The high investment in ERP systems means that realizing benefits from these implementations is of critical importance to many organizations. Researchers have examined the benefits that can be delivered from ERP implementations (Staeher, 2010). Yet, the delivery of benefits from many ERP implementations remains disappointingly low. Whilst there is evidence from previous research that benefits are delivered from some ERP implementations, the lack of consistent successful delivery of these benefits suggests that the process of achieving benefits is not completely understood. Several studies have examined ERP customization (e.g. Light, 2001). Existing studies suggest that there may be a link between ERP customization and the benefits (Light, 2005). However, they do not consider the influence of the type of ERP customization undertaken.

Against this backdrop, this study provides important new contributions in understanding the process of benefits realization from ERP systems. It is envisaged that these contributions will enable organizations to be more effective and efficient when adopting and maintaining ERP systems and thereby deliver superior services both internally and externally. In turn, this should increase the likelihood of getting the best return from ERP investments.

1.6. STRUCTURE OF THE THESIS

This section outlines the structure of the thesis. An outline of the thesis structure is also presented in figure 1.1.

- Chapter 2 reviews the evaluation of IS/IT, benefits management and customization literature in the light of ERP systems. The chapter concludes with a summary of the gaps found in the literature which require further research.
- Chapter 3 outlines various research philosophies and strategies. It then presents the research philosophy and methods adopted for this research. It also describes the data analysis process adopted for this study.
- Chapter 4 describes the findings from phase 1 of the empirical research. It also discusses the data collection and analysis method adopted for this phase 1.
- Chapter 5 presents the findings from the first case of phase 2. The findings are concentrated on two individual projects. This case has had real success in following the benefits management approaches and realizing the benefits from its IS/IT investments.
- Chapter 6 describes the findings from the second case study. In this case study, one of the two projects, studied was really a success in terms of exploiting the benefits from IS/IT investment.

- Chapter 7 presents the findings from third and last case study of phase 2. This case study also had mixed results in terms of benefits realization.
- Chapter 8 discusses the findings from chapters 5, 6 and 7 in the light of research objectives. The chapter also briefly considers the practical and academic implications of this research before considering the areas for future research.

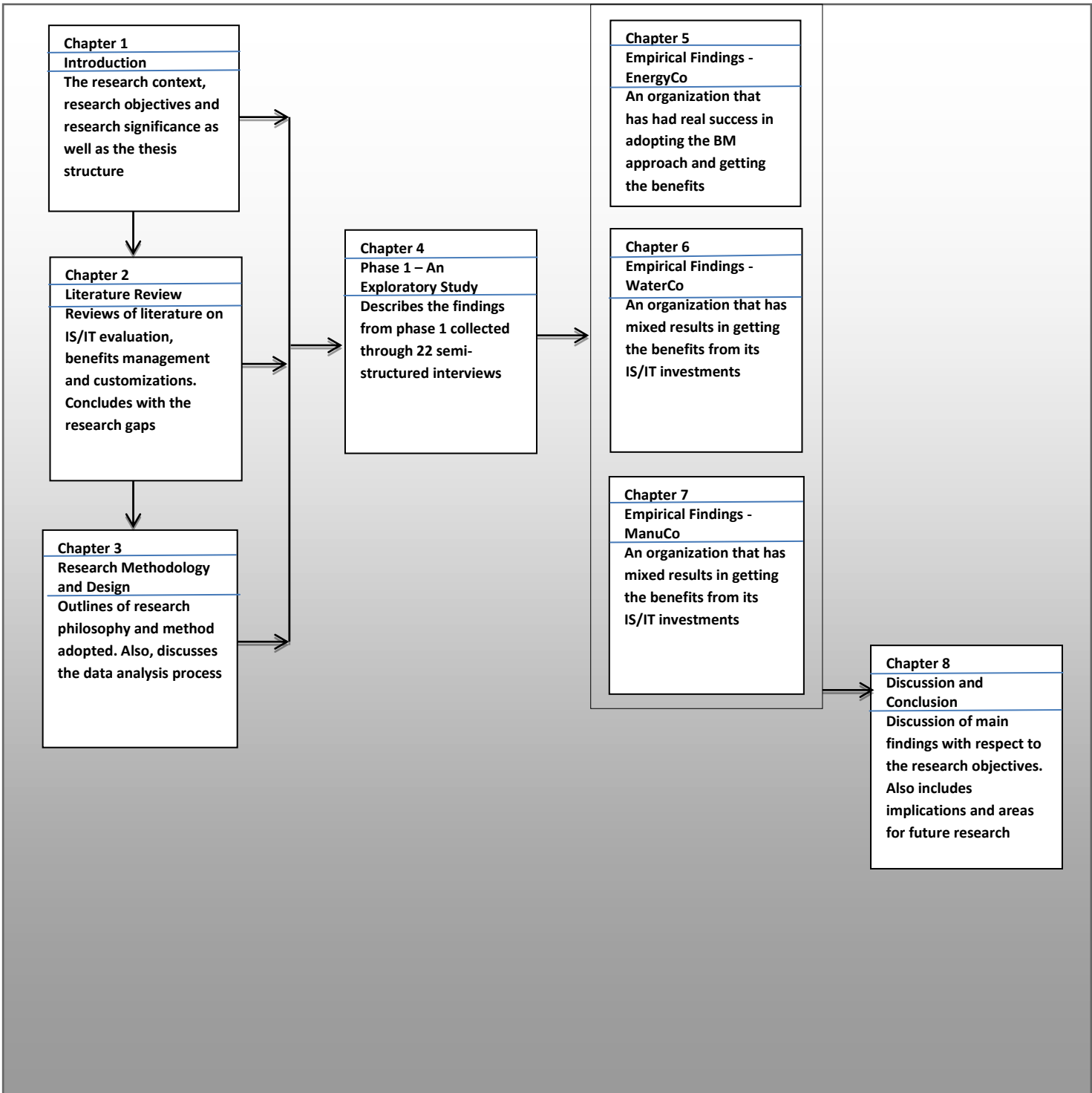


Figure 1.1: The Structure of the Thesis

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

The business environment is rapidly changing in the face of an increasingly competitive, dynamic and global market place. Companies face tough challenges to reduce costs, improve supply chains, reduce stock levels, improve the quality of the products and enhance the product range. As explained in section 1.2, most businesses aim to leverage Information Technology (IT), because of its ability, to resolve some of these challenges. However, ineffective management of IS/IT projects had led to the wastage of precious resources such as time, money and efforts (Fortune and Peters, 2005; Peppard and Ward, 2005). In a recent study of IT executives, Levinson (2009) found that 24% of the projects were considered total failures and a further 44% were considered as challenging because they didn't finish on time and within budget; and missed some of the intended features as well. Hence, it is not surprising that in many organizations, IT investments are viewed as a failure because these investments have been unable to provide good returns for organizations (Peppard et al. 2007). It gives rise to an intriguing paradox which shows that even though organizations are aware of the importance of IT and they are willing to invest in IT, yet they have not been able to translate these investments into real benefits (Santos & Sussman, 2000).

Package based ERP systems are not intrinsically different to other IS/IT investments.

According to AMR Research Group, the ERP market was bound to expand by 11% in 2011 (Jacobson et al. 2007). Another report by Forrester shows that volume of ERP market in 2011 will be \$45.5 billion and it will reach \$50.3 billion in 2015 (CBR, 2011). However, despite the ever increasing significance of ERP systems and investments in these systems, not all ERP projects end in success. For example, Barker et al. (2003) describe how a major

soft drink bottler's ERP system was intended to provide the benefit of integrated communication, but once live was considered a hindrance to the overall business. Similarly, Kanaracus (2010) observes that the introduction of an ERP system did not lead to any increase in revenues in a US listed company, Lumber Liquidators. Some others well documented ERP disasters include a US pharmaceutical company, FoxMeyer. Its annual revenues amounted to \$5 billion. The company could not manage the SAP implementation and as a result went into liquidation (Scott, 1999). Hershey was another US company who had problems with implementing the SAP system. It spent a huge amount of money (\$140 million) on its SAP implementation but in the first year after go-live, it saw a deduction of \$150 million in its revenues (Carr, 2002). On the other hand, there are organizations that had been successful, when compared, in realizing the desired benefits from their ERP implementations. For example, a global personal computers manufacturing organization had a significant and positive improvement on its customers' satisfaction as a result of its ERP implementation (Murphy & Simon, 2002). Because of such high profile variability in the success of IS/IT projects, it is vital to understand why some projects are more successful than others (Seddon et al. 2010).

The motivation for this research is to develop insights that can help organizations to improve benefits realization from their ERP systems. In doing so, this project is aiming not only to evaluate the benefits gained by different organizations; but also the activities that are required to deliver those benefits e.g. organizational changes, customizations etc.

This chapter presents a critical reviewing of the existing literature. Whilst doing the literature review, it was ensured that the research articles were carefully explored to get the literature relevant to the research issues. For this purpose, web research facilities were

extensively utilized and online resources such as Emerald, Web of Science, Springer, Science Direct and IEEE-Xplore were used. Most articles were selected which were containing ERP/IS as keywords along with the research issue (s) that this project intended to investigate (Figure 2.1). These articles were categorized based on the research issues and were then analysed to identify the main strengths and weaknesses of the existing literature.

Outline of the Literature Review

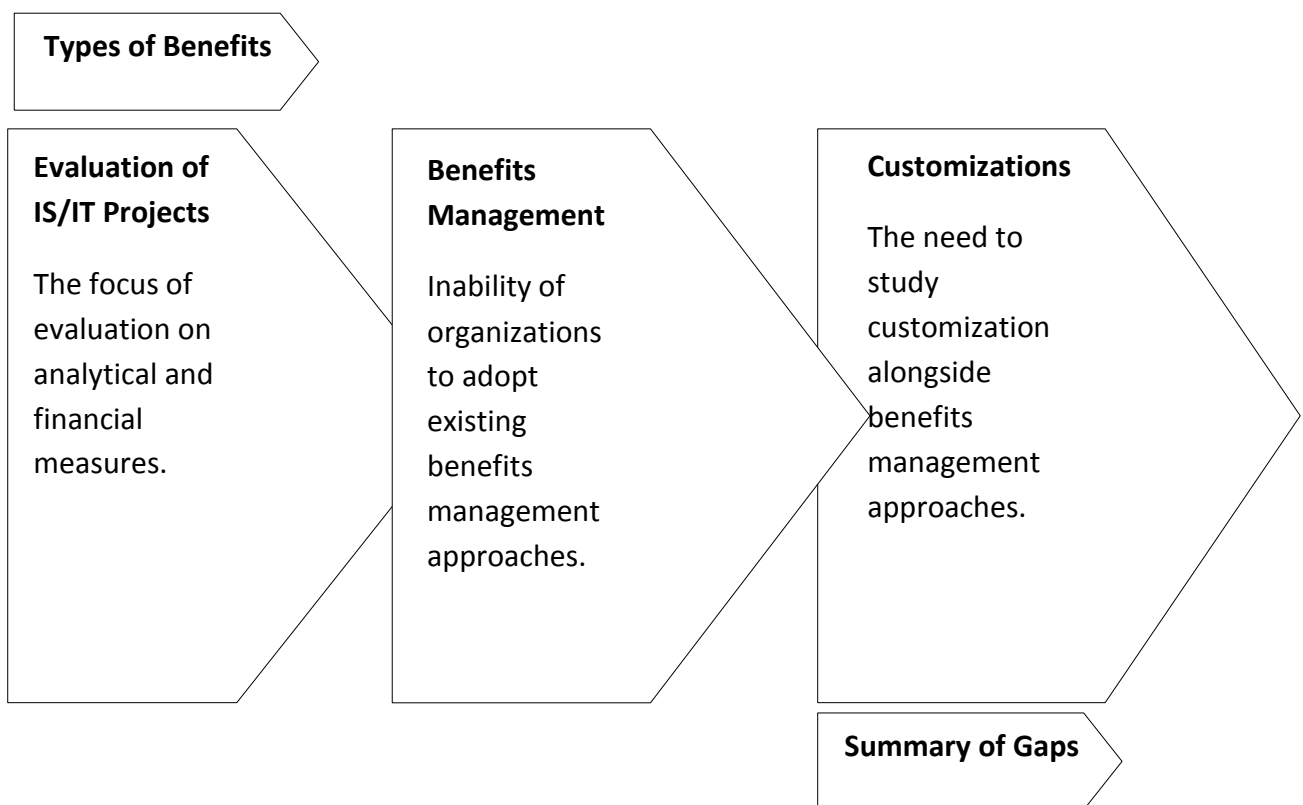


Figure 2.1: An Outline for the Structure of the Literature Review

The chapter commences with a review of the different types of benefits that can be gained from IS/IT investments. These mainly include operational, managerial, strategic, IT infrastructure and organizational benefits. The next section reviews the literature with respect to the evaluation of IS in general, and in particular, the evaluation of benefits from ERP systems. It provides insights about the issues with respect to the existing evaluation methods.

The review then discusses the Benefits Management (BM) approaches. This section sets the context for this research by assessing different types of BM models. The next section discusses the different rationales for implementing standard and customized ERP systems. This section also presents different typologies of ERP customizations. It also provides key insights about the issues that have arisen from the customization literature. Finally, the chapter concludes by presenting the overall critique of the literature from the earlier sections and an overview of the opportunities for further research.

2.2. TYPES OF BENEFITS

Organizations should identify and decide upon the contributions and overall benefits that they intend to achieve from their IS/IT investments. Identifying and prioritising the benefits to be targeted can be an iterative process as many new benefits emerge while different ideas are being considered and discussed (Ward & Daniel, 2006: 105-106).

A number of frameworks have been proposed to help identify and classify benefits from IS/IT investments (Irani & Love, 2002; Mirani & Lederer, 1998). These frameworks either use different organizational activities such as strategic planning, management control or operational control to categorize benefit types, or consider benefits as either tangible or intangible (Irani, 2002). Many studies have also been conducted that identify the types of benefits that organizations can achieve through package based ERP systems. The huge investments in ERP systems suggest that organizations have a high degree of confidence that significant benefits will be realized the benefits from these investments. Ross et al. (2001) has mentioned some common benefits which firms try to achieve through ERP systems. These are process improvement, data visibility and improved customer services &

strategic decision making. Poston et al. (2001) have also discussed some of the benefits which companies aim to achieve at the time of ERP adoption. Some of these are reducing labour cost, bureaucracy and data entry errors. In another study, Esteves (2009) has presented some benefits which Small and Medium Enterprises (SMEs) might gain from the use of ERP systems. These include significant improvement in financial processes and management, facilitating effective management of operations and the optimal management of resources. Professional literature has also discussed numerous benefits of ERP systems. Davenport et al. (2002) has highlighted the top ten benefits which companies can gain by using ERP systems. These include benefits such as improved customer service, improved financial management and cycle time reduction. Another professional study was done by Deloitte and Touche (1998), in which they enquired respondent companies the benefits which they were looking to obtain from the ERP systems. Companies intended to seek both tangible and intangible benefits while embarking on ERP projects. Most noticeable intangible benefits which companies sought were internal integration, improved customer services and improved information & processes. On the other hand, most significant tangible benefits were achieving cost efficiency in inventory, personnel and procurement as well as improvements in productivity, cash/order management and overall profitability.

The most comprehensive study, in the academic literature, of a benefits classification, for ERP systems has been provided by Shang et al. (2000). They have presented a comprehensive framework of ERP benefits. In this framework they have consolidated almost all the benefits discussed both in the academic and professional literature. This framework can help individual organizations to choose the type of benefits which they want to achieve from their ERP implementations. This framework has got five basic dimensions,

while each benefit dimension having further sub-dimensions. *These are Operational Benefits (Dimension 1), Managerial Benefits (Dimension 2), Strategic Benefits (Dimension 3), IT Infrastructure Benefits (Dimension 4) and Organizational Benefits (Dimension 5).* A summary of sub dimensions is presented in the Table 2.1. However, despite their promised benefits, the failure rate from ERP systems remain stubbornly high; it is estimated between 60% and 90% (Ptak and Schragenheim, 2003). Therefore, new insights are required that can reduce the failure rate of ERP systems.

Sub dimensions of Desired Benefits

(21 in total at this stage)	
1.Operational	1.1 Cost reduction,
	1.2 Cycle time reduction,
	1.3 Productivity improvement,
	1.4 Quality improvement,
	1.5 Customer services improvement
2.Managerial	2.1 Better resource management,
	2.2 Improved decision making and planning
	2.3 Performance improvement
3.Strategic	3.1 Support business growth
	3.2 Support business alliance
	3.3 Build business innovations
	3.4 Build cost leadership
	3.5 Generate product differentiation(including customizations)
	3.6 Build external linkages (customers and suppliers)
4.IT Infrastructure	4.1 build business flexibility for current and future changes

	4.2 IT costs reduction
	4.3 Increased IT infrastructure capability
5.Organizational	
	5.1 Support organizational changes
	5.2 Facilitate Business learning
	5.3 Empowerment
	5.4 Built common visions

Table 2.1: Different Categories of Benefits

2.3. EVALUATION OF BENEFITS

Evaluating the benefits from IS investments is important because benefits can only be realized if they are measured and managed (Ashurst et al., 2008). Researchers have developed several measures to evaluate the success of IS investments (DeLone & McLean, 1992, 2003; Sedera, Gable, & Chan, 2004; Kaplan & Norton, 1992). However, in practice, most organizations concentrate their efforts on measuring the success of ‘project management’ rather than the success of the implemented system (Petter et al., 2012). Further, to evaluate the success, the organizations tend to focus on fulfilment of technical specifications rather than the actual benefits provided by the system (Jones and Hughes, 2006; DeLone & McLean, 1993; Ward, Taylor, & Bond, 1996). This is unfortunate because credible success measurement is key to demonstrating the value gained from information systems. The true value of an information system often comes months or even years after its implementation. The value comes when the system is being used effectively by management to make key decisions, or by customers to make buying decisions, or by suppliers to improve product and delivery performance. At best, only 20 percent of a

system's value is created during the system development process, while 80 percent of its value is realized during its use (Marchand, Kettinger, & Rollins, 2000); therefore, use and outcomes should be the primary focus of IS success measurement within organizations.

Although research has been conducted to evaluate the benefits realized from ERP systems in individual organizations (e.g. MacAfee, 2002; Mandal et al., 2002; Shang et al., 2002; Uwizeyemungu et al., 2010), but the majority of the studies measuring the benefits gained through ERP systems have been conducted through surveys. Henedricks et al. (2007) conducted a study to find the impact on the profitability and stock value of the firms adopting the ERP systems. The authors found some evidence of an improvement in profitability but there was no significant change in the stock value of the respondent firms. However, they discovered that the improvement in profitability was found to be stronger in the firms who managed to adopt ERP systems earlier. Another survey was conducted by Chen et al. (2009). In this survey, the authors tried to evaluate the economic benefits of one particular ERP system. The results showed that the organizations had an increase in their total assets and the ratio between assets and liabilities was in stable condition. However, the authors also reported the slowing down of the inventory turnover and account payable turnover for the respondent firms. Poston et al. (2001) also conducted a survey in which they found that there was no increase in residual income and no decrease in selling, general and administrative costs after 3 years of system installation. But, their survey showed some support for decrease in costs of goods sold after 3 years of system installation. Matolcsy et al. (2005) have done a similar study. In their survey they noticed sustained operational efficiencies, improved overall liquidity and improvements in accounts management in the firms that adopted ERP systems. Madapusi et al. (2010) also found significant support for

improvement in operational performance of the firms using the ERP systems. Hunton et al. (2003) found that there was no significant difference in the financial performance of those firms which adopted ERP systems. These results are consistent with the results of the study from Poston et al. (2001). However, Poston et al. (2001) note that, a comparison with the firms who did not adopt ERP systems showed that firms with ERP systems performed much better. In another survey conducted by Velcu (2010), results show that ERP systems can help in realizing internal efficiency benefits. These benefits can then lead to the customer related benefits. Very similar results are echoed in another study by Annamalai et al. (2011). They found out that SAP & Oracle (two main ERP systems) lead to increased customer responsiveness and reduction in costs in the manufacturing sector. Yang et al. (2009) did a survey on IT firms. The results of the survey showed that the IT firms, through the use of ERP systems, can realize operational benefits (e.g. cost reduction), tactical benefits (e.g. better decision making) and strategic benefits (e.g. building product differentiation).

In another study by Hawking et al. (2004), a survey was done involving IS managers. In this survey, the managers were informed about a set of benefits which can be obtained from ERP systems. They were first asked to rank on a scale of 1 to 7 which benefits they sought from the use of ERP system. They were then again asked to rank on a scale of 1 to 7, the actual benefits which they obtained from the system. It was found that there was a difference between the expected and actual benefits i.e. not all the benefits which managers were looking for were obtained from the use of ERP system. Ross et al. (2000) also did a study involving companies who installed major ERP packages (SAP, Baan, PeopleSoft and Oracle). The authors observed the effects of ERP implementation at different stages on the companies. From the companies observed, the authors reported one

firm managed to cut inventory by 30% in the first year, whilst another had increased inventory turns from eight to twenty six times a year. Another firm removed \$35 million from its logistic expenses. In another study done by Kale et al. (2010), it was found out that SMEs are getting benefits such as reduction in inventory, improved customer service, reduced planning cycle time and improved communication through the use of ERP systems. Academic literature also provides few other studies, where authors have tried to measure the effect of ERP on specific business processes. Bendoly et al. (2005) have measured the effect of ERP on B2B e-procurement. They observed that when compared with non-adopters of ERP system, the adopting firms reaped greater savings through B2B procurement. Another study was done by Wieder et al. (2006) to measure the impact of ERP systems on the overall firm performance and specific business process performance. The authors used both financial and non-financial performance indicators to measure the performance. They found no significant difference in the overall performance and the business process (supply chain) performance of the firms who were using ERP system when compared with the non-ERP using firms. However, it was argued in the two separate studies conducted by Su et al. (2010) that ERP systems do contribute in creating the competences that are required for successful supply chain management.

Studies conducted through surveys have attempted to measure the benefits by taking a holistic view. While this research is beneficial in identifying the benefits achieved by different organizations, it does not provide any precise information about how different organizations were able to achieve the benefits. Also, this strand of research is assessing the benefits through analytical means i.e. by using different financial ratios and very few of them are measuring the benefits through interpretive methods. Although, it is important to

measure the financial performance after the use of ERP systems but looking solely at the financial aspects only may not yield the full picture. This stream of research also does not explain the reasons behind the varying level of success achieved by different organizations. Another deficiency within these studies is that they don't provide information about the various activities that were undertaken to realize benefits from ERP systems. Therefore, it will be vital to conduct studies that not only take a holistic view of the firm using ERP system but also look at different organizational factors that are important to realize the benefits from ERP systems.

2.4. BENEFITS MANAGEMENT

Benefits realization from system development projects remains disappointingly low. In practice, many organization still struggle to realize the benefits from their ERP systems. One promising way to improve returns from IS/IT investment is to focus on improvement in organizational performance rather than the 'usual' delivery of technological artefact, on time and on budget. According to Marchand and Peppard (2008), most benefits don't emerge just from the introduction of new technology; rather they appear from the changes in the way organization does the business. It has been argued that one possible mechanism to keep a focus on the improvement in organizational performance is to adopt the formal Benefits Management (BM) program. BM has been defined as *'the process of organizing and managing, such that the potential benefits arising from the use of IT are actually realized'* (Ward & Elvin, 1999). This implies that organizations focus on getting the actual benefits from the projects rather than the on-time and on-budget delivery of the solution. The business transformation is the key element in benefits management approaches. Benefits

management approaches will facilitate the changes in organizational processes to complement the system functionality in order to improve the performance of business processes (Doherty et al., 2012). The existing studies highlight the importance of organizational changes that are essential to successfully realize benefits from system development projects (Marchand & Peppard, 2008; Marchand et al., 2000; Peppard and Ward, 2005; Hughes & Scott Morton, 2006; Doherty et al., 2012). These studies argue that benefits don't materialize simply through the 'insertion' of a new technology within organizational processes. In fact, benefits arise when the people in the organizations recognize the importance of working with the newly implemented technology and embrace the changes in their business processes (Marchand et al., 2000). Technology merely works as an enabler for these changes. These changes can be done either to improve a current process or to introduce a completely new process (Peppard and Ward, 2005). Research has also found that the organizations that invest on business transformations, alongside the IT investment, tend to do better when compared with the organizations that don't (Hughes & Scott Morton, 2006). Also, the changes in organizational processes, to realize benefits, can occur in different forms. For example, an organization can only realize the benefits from the implementation of a CRM system, if an effort is made to change the culture such that the agents actually feel more empowered and more flexible whilst managing the relationships with the customers (Peppard et al., 2007). Unlike traditional IT systems, the implementation of ERP systems require even more radical business changes if the organizations want to realize benefits from these systems (Infinedo et al., 2010). However, despite their importance, a large number of organizations don't embark on business transformation alongside the implementation of ERP systems (Panorama Consulting Solutions, 2011). This might also be a potential reason for the low benefits realization from the ERP systems.

Most information system projects will involve a degree of organizational change but it is especially true for complicated and highly integrated package based ERP systems. Changes caused by ERP systems can be differentiated by their capacity of reaching to a large number of functional units within an organization (Staehr et al., 2012). These changes are going to have a profound impact on organizational processes, structure and culture (Markus, 2004). However, mediating the changes from systems development projects is not an easy task (Clegg et al., 1997; Doherty and King, 1998). Hence, a major reason for the failure of majority of system development projects is the inability of the organizations to manage IT-enabled organizational change (Doherty et al., 2003; Peppard and Ward, 2005). This is apparent in ERP development projects as well. According to a recent study, most organizations find it difficult to manage process and organizational changes while implementing ERP systems. This could also explain the reason of why a huge number of organizations are still not engaging in organizational changes while implementing ERP systems (Panorama Consulting Solutions, 2011).

Several studies have attempted to develop models and frameworks to manage the entire benefits management process that include: the Model of Benefits Identification (Changchit et al., 1998); Active Benefit Realization (Remenyi et al., 1997) and the Cranfield Process Model of Benefits Realization (Ward et al., 1996). Each of these approaches is now briefly reviewed.

2.4.1. THE MODEL OF BENEFITS IDENTIFICATION

Changchit et al.'s (1998) Model of Benefits Identification (MBI) is based on four sets of activities: problem identification, a mini-study of current business processes, a mini-design

of proposed business processes and comparison of benefits from current and proposed processes. Problem identification is conducted through a discussion to identify the user needs and requirements for the new processes. These problems are then prioritized taking into account costs, timing and other business matters. A mini-study of current business processes is then conducted to identify the causes of the problems and ways to resolve them. Following this step, a mini-design of proposed business processes is developed. This is an initial, rough design of the proposed business processes. Finally, a comparison of benefits from the current and proposed processes is taken to evaluate likely benefits. Changchit et al. (1998) add that the model is iterative with each group of activities potentially requiring further information or modification of the previous step.

2.4.2. ACTIVE BENEFITS REALIZATION

In their Active Benefit Realization (ABR) process, Remenyi et al. (1997) have combined the concepts of evaluation and benefits management. Fundamental to this approach is the continuous evaluation of benefits and active involvement of primary stakeholders throughout the systems development process. The approach can be divided into three phases (Lin and Pervan, 2003). In the first phase, the stakeholders develop a clear statement of the problem or the opportunity and the precise business, financial and project requirements. A decision is then made as to whether or not to launch the project. If the organization decides to initiate the project then in the second phase, the stakeholders review and assess how the project is progressing through formative evaluation. Progress is measured against business, financial and project targets with a specific emphasis on business benefits. In the third phase, as a result of the formative evaluation some initial

targets are updated. This feedback loop helps the main stakeholders to understand better what is required and what is possible. A key tool in the ABR process is the creation of the business picture, the financial picture and the project picture. Remenyi and Sherwood-Smith (1998:84) define these pictures as *'a formalized expression of the information systems development project targets in business benefit terms, with the supporting financial budget and the supporting development project plans.'* They argue that holistic use of the pictures would enable effective planning, evaluation and control of the benefits realization process.

2.4.3. THE CRANFIELD PROCESS MODEL

The Cranfield Process Model of Benefits Management (Ward *et al.*, 1996) comprises of five steps forming an iterative cycle. In this cycle, the potential benefits are identified, a plan is devised for their realization, the plan is executed, the results of the benefits plan are reviewed and evaluated, and finally the potential for further benefits are identified. The newly identified benefits feedback into the first identification step and so the process continues during the operational life of the system.

The central element of the Cranfield model is the Benefits Dependency Network (BDN). The BDN is a framework that is designed *'to enable the investment objectives and their resulting benefits to be linked in a structured way to the business, organizational and IS/IT changes required to realize those benefits'* (Ward and Daniel, 2006: 133). The framework is shown in Figure 2.2. A brief description for each element of the BDN framework is presented in the following:

- **Investment Objectives:**

'Investment objectives should be a set of statements that define the 'finish line' for the project. As a set, they are essentially a description of what the situation should be on completion of the investment' (Ward & Daniel, 2006: 106, 128). Investment objectives determine the final output of the IS/IT investment. It is important not to confuse objectives with the benefits. Investment objectives will only be achieved, once the benefits have been realised (Ward and Daniel, 2006).

- **Business Benefits:**

Business benefit is 'An advantage on behalf of a particular stakeholder or group of stakeholders' (Ward & Daniel, 2006: 107). Once the organization has agreed on a set of objectives, they can then be translated in terms of business benefits which are essentially improved ways of working.

- **Business Changes:**

Business changes are 'the new ways of working that are required to ensure that the desired benefits are realized' (Ward & Daniel, 2006: 109). Business changes are the permanent new ways of working for a stakeholder or group of stakeholders.

- **Enabling Changes:**

Enabling changes are the 'changes that are prerequisites for achieving the business changes or that are essential to bring the system into effective operation within the organization' (Ward & Daniel, 2006: 109). These changes are usually 'one-off' (Ward and Daniel, 2006).

- **Enabling IS/IT:**

IS/IT enablers are 'the information systems and technology required to support the realization of identified benefits and to allow the necessary changes to be undertaken' (Ward & Daniel, 2006: 136).

The BDN, shown in Figure 2.2 is created from right to left, with agreement on the *investment objectives* for the IS development project and identification of the expected *business benefits* associated with these objectives. Each benefit is then considered in turn and the changes necessary to realize the benefit are then identified. Two types of changes may be required. *Business changes* are permanent new ways of working that are required to ensure that the desired benefit is achieved and can be sustained. *Enabling changes* are prerequisites for achieving the business changes or may be essential to bring the system into effective operation within the organization. These enabling changes may only be required to be performed once. Finally, the information technology or systems have to be considered. The required *IS/IT enablers* are identified to support the realization of anticipated benefits and allow the necessary changes to be undertaken. For example, IS/IT enablers may include the functionality of process control, production planning, billing or finance (Ward and Daniel, 2006).

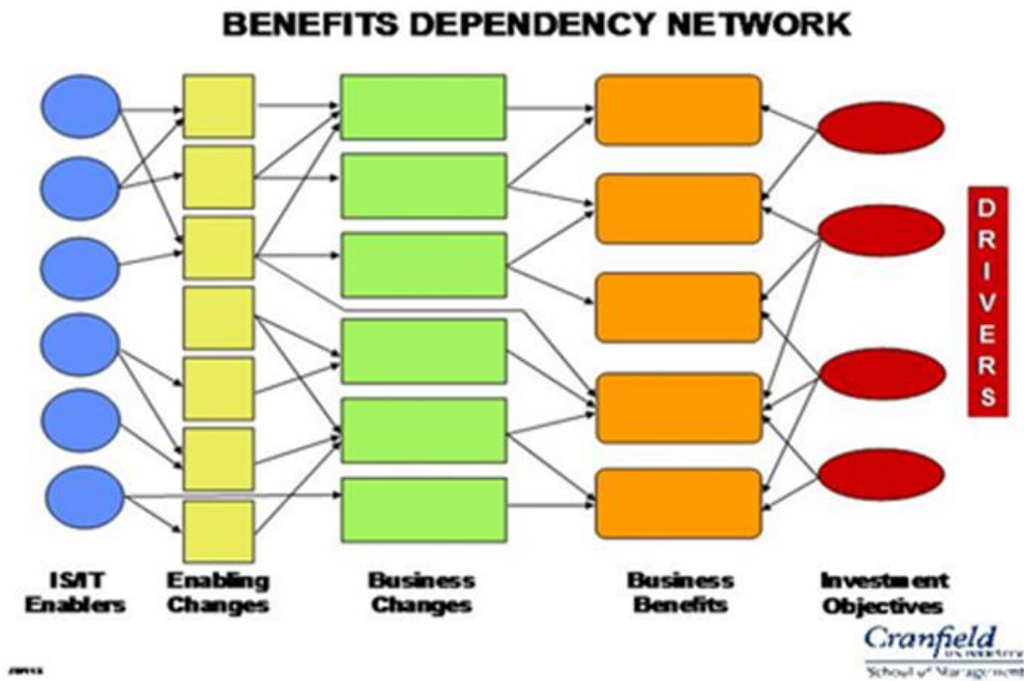


Figure 2.2: Benefits Dependency Network

All three BM models focus on the stakeholders’ involvement in the system development projects. There is a growing recognition that organization should adopt the BM approaches (Peppard et al., 2007). However, in practice, very few organizations are following these approaches (Ashurst et al., 2008). Also, to date there has been very little empirical investigation of what organizations are doing in practice to manage benefits from their IS/IT investments (Doherty et al., 2012). Consequently, there is an urgent need for new interpretive contributions that present insights into how benefits oriented practices might best be operationalized and incorporated into systems development projects and project reviews.

2.5. CUSTOMIZATION OF ERP SYSTEMS

It has been argued that one potential way to improve benefits realization from ERP systems is to implement the [so-called] ‘*Vanilla*’ system. Many observations have been made, in both the academic and the professional literature, which suggest that organizations should avoid tailoring the system as much as possible when implementing or using the ERP system. This strand of literature presents different reasons for having a Vanilla ERP system; a summary of these reasons is presented in Table 2.2.

Helo et al. (2008)	Standard ERP systems bring with them the standardized industry-related best practices. After installation of the standard ERP systems, these practices can then be monitored and controlled, which leads to the greater efficiencies for the organization.
Parr et al. (2000) & Finney et al. (2007)	Vanilla ERP is a term which is widely described as one of the critical success factors (CSF) for the successful implementation of the ERP systems. There is an underline assumption with ‘vanilla CSF’ that the ERP system selected is the recent version of the software and is having a suitable fit with the organization’s business requirements.
Robey et al. (2006)	One of the biggest advantages of the standard ERP systems is that they have low implementation and maintenance costs compared with customized ERP systems. If installed, these systems, decrease the financial burden on the organizations to maintain it.
Brehm et al. (2001)	Another main advantage of the Vanilla ERP system is the ease for the installation of newer and upgraded version of the package. Standard ERP system can also enjoy advantages of newly developed modules like SCM, CRM etc. These modules can then be integrated with the standard package much easily compared with the customized systems.
Robey et al. (2006)	Standard ERP systems leave more time for the companies to focus on building the company specific applications that cannot be purchased off the shelf.
Robey et al. (2006)	The adoption of a standard ERP system, which is an industry leader, makes it possible for the organizations to hire new employees already skilled in the use of the package e.g. if a company installs standard SAP system, it will have much more chances of hiring the personals with the standard SAP knowledge instead of customized SAP system.
Grossman et al. (2004)	Standard ERP systems are relatively faster to implement. This gives organization the opportunity to finish the project within time and budget.

Harris (2000)	ERP systems take some times before contributing towards ROI. This situation becomes more complex if the Vanilla version of ERP system is not installed.
Turner (2006)	Standard ERP systems provide an opportunity to standardise IT infrastructure, which means standardisation in terms of software, hardware, training and systems upgrading all at one time.

Table 2.2: Rationales for Standard ERP System

By contrast, there is also an opposing view which suggests that having a truly ‘vanilla’ system, although desirable, is rarely achieved. Because of the ever evolving requirements and individual needs, even a vanilla package typically undergoes some type of customization (Gargeya et al., 2005). Different reasons which can lead to the modification of ERP packages are presented in Table 2.4. It is evident from looking at this table that ERP packages do undertake different type of customizations and there is no such thing as completely ‘vanilla-ERP’. According to Luo and Strong (2004), customization is a process which involves the alteration of an ERP system to match the organization’s existing business processes. Instead of doing business process re-engineering, organizations choose to tailor the system to match their needs. A contrasting, less process orientated perspective is taken by Light (2001) who considers customization as an activity that makes changes or additions to the functionality already available in the standard ERP software. A third view of customization is presented by Davenport (1998) who argues that at the time of ERP implementation, organizations first choose which modules to install. Organizations then undertake table configurations to achieve the best fit with organizational processes. By contrast to the previous views, Davenport (1998) considers customization only in terms of table configuration, alongside wider module customization.

Consequently, it is clear that there is a lack of consistency in how the term customization is interpreted and conceptualised in the existing literature. This lack of consistency is also apparent in other aspects of previous ERP studies. For example, several authors have developed different customization typologies (Davenport, 1998; Brehm et al., 2001; Luo and Strong, 2004). A summary of these typologies is presented in Figure 2.3.

Davenport (1998)	Luo and Strong (2004)	Brehm et al. (2001)
1. Configuring Modules	1. Module Customization	1. Configuration
2. Configuring Tables	2. Table Customization	2. Bolt-ons
	3. Code Customization	3. Screen masks
		4. Extended reporting
		5. Workflow programming
		6. User exits
		7. ERP programming
		8. Interface development
		9. Package code modification

Figure 2.3: Typologies of ERP Customizations

Although, there is some consistency between the typologies developed by Davenport (1998) and Luo & Strong (2004), several inconsistencies and contrasting interpretations are apparent across all three typologies. For example, Brehm et al. (2001)'s typology includes workflow programming. To write industry workflows, may require code modification that is a separate category in the typology presented by Luo and Strong (2004). Therefore, it is not clear whether this customization should be categorised as workflow programming or core code customization. An additional weakness in these existing typologies is that they may no longer reflect the more sophisticated functionality and internal architecture of contemporary ERP systems. For example, in modern ERP systems, most workflows can be developed through user exits. Therefore, there is a need to re-examine our understanding of customization in relation to ERP systems and the potential to enhance typologies of ERP customizations. This study has endeavoured to address this pressing, and practical, issue. For the purposes of this study, we have attempted to simplify the typology of Brehm et al.

(2001). The rationale for choosing, and simplifying, Brehm et al. (2001)'s typology is its depth and detail. Unlike the typologies developed by Davenport (1998) and Lou & Strong (2004), it lists all possible options for customizing an ERP package. Brehm et al. (2001) also provide a description and an example of each type of customization. Due to its detailed nature, it has been extensively used and cited in the academic literature. This research project, also, attempts to study various types of Brehm et al. (2001)'s typology in relation with contemporary ERP systems and suggests a number of refinements, explained below.

Since the development of Brehm et al. (2001)'s typology, ERP packages have matured hugely in terms of functionality. Consequently, we have attempted to simply Brehm et al. (2001)'s typology by taking out the types of customization that don't fit well with the contemporary ERP systems. Further, we have also renamed few types to align them with the customizations done on the modern ERP systems. The refined typology is presented in table 2.3.

Ten years ago when the ERP product was not so advanced, *Configuration* could have been categorized as a type of customization but nowadays, with the amount of functionality available in the ERP packages, configuration of modules and tables (Davenport, 1998; Luo and Strong, 2004; Brehm et al., 2001) cannot be taken as a type of customization. In modern ERP systems, configuration merely means 'switching on' of options pre-built within the standard software i.e. identifying certain options within the package that an organization needs, and then turning them on. *ERP Programming* (Brehm et al., 2001), also known as Composite Developments, refers to enhancing the functionality in the ERP package through the language provided by the vendor but without going into the core code. The modern ERP systems can also be enhanced either through *Bolt-ons*. Bolt-ons are, generally, third party

software programs. These programs are integrated with the standard ERP package to either provide an additional functionality or fills the gap for missing functionality in the ERP package. Contemporary ERP packages can also be enhanced through *User Exits*. User Exits are subroutines that trigger a predefined event during the execution of ERP packages. User Exits enable developers to enhance the functionality provided within the standard software to support specific organisational needs. Bolt-ons and User Exits are two separate types in the typology of Brehm et al. (2001). For simplification, these three types can be consolidated under '*Enhancements*'. So in Enhancements, the package is enhanced either through bolt-ons, through user exits or through composite developments utilising the functionality available in the package or through the language provided by the vendor; for example, in SAP, it can be done using ABAP. Changes in work flow, these days, are usually done through user exits or through composite developments. Therefore, there is no need for work flows as a separate typology. Brehm et al. (2001) have also presented *Screen Masks* and *Interface Development* as two separate types of ERP tailoring but, for modern ERP systems, there is not a significant difference between them. Therefore, these two different types can be consolidated as one single type and can be renamed as *Interfaces*. The two remaining types of customizations are *Extended Reporting* and *Package Code Modifications* (Luo and Strong, 2004; Brehm et al., 2001). Code modifications involve the alteration of the core ERP code. Vendors usually do not allow altering the core code. As stated above, it is a 'no-go' area for customers. For simplification and to keep in line with the market terminologies, extended reporting can be renamed as *Reports* and package code modifications as *Modifications*.

Despite the availability of different reasons to modify of the ERP packages, organizations should be cautious whilst handling the process and requests of customizations. Efforts should be made to stop excessive and unnecessary modifications to the package, where possible. Organisations should, also, proactively engage to see the impact and scale of various types of customizations. For example, it is envisaged that development of interfaces and reports will have, typically, low impact for maintenance and future upgrades. However, package enhancements and code modifications might have medium and high impact levels, respectively, for future integrations and during maintenance.

Customisation Type	Description
Enhancements	ERP Programming/Composite Developments Bolt-ons User Exits
Interfaces	Screen masks Interface development
Reports	Extended reporting
Modifications	Package code modifications

Table 2.3: Revised ERP Customisation Typology

Several studies have found that there are many reasons for organisations choosing to customise their ERP system. These studies are summarised in Table 2.4. Many of these studies also suggest that ERP customization may lead to benefits being achieved from an ERP system. Light (2001) reports that ERP customization can lead to benefits such as adding functionality, process automation and the provision of new reports. Chou and Chang (2008) also report that ERP customization has a significant influence over intermediate and overall benefits derived from the system. They also found that achieving organizational alignment through functional customization provided a better improvement in ERP benefits than

achieving organizational acceptance of alignment or process adaptation. Similarly, Gattiker and Goodhue (2005) found that ERP customization could improve local efficiency and intermediate benefits for manufacturing plants. Although these studies establish a link between ERP customization and benefits, they do not consider the influence of the type of ERP customization undertaken or how this influence is manifested. As customization happens at large scale these days (Panorama Consulting, 2011), it is important to explore the relationship between different types of the customization and the resultant benefits. Understanding this relationship may also improve the benefits realized from the ERP systems. Consequently, it is also important to explore how ERP customization may fit into existing models and frameworks for managing the entire benefits management process.

Source	Reason for Customisation
Light (2005)	ERP packages, sometimes, don't include the required functionality i.e. it is missing from the package. For example, an organization may have a special cost structure for a specific product and this structure may be missing from the package. So a customization might be performed by developing the missing functionality and then incorporating it within the standard functionality of ERP package.
Light (2005)	Sometimes, the functionality required by the organization is different from the functionality which is present in the ERP package. For example, the way in which organization perform its MRP tasks (because of its industry needs) may be different from the core structure of MRP present in ERP package. So a different functionality may be developed and then re-integrated into the package.
Light (2005)	ERP packages generally include a set of corporate documents to perform the organizational tasks. Modifications are done to these documents, sometimes, to add some fields and to make it look more appealing to the users.
Light (2005)	Customizations are often performed to increase operational efficiency. For example, adjusting the screen shots in the production area from being too cluttered and too complex to the simple and uncomplicated ones. In one instance, it decreased the operating error from 4% to 7% as a result of adjusting the screens.
Light (2005); Gupta et al. (2004)	Organizations often want to keep some of their existing functionalities that are perceived of some value to them, which are not present in the ERP package. For example, an organization may want to maintain the way it pays to its drivers.

Source	Reason for Customisation
Lynch (1984); Light (2005)	Customizations can also occur because of the lack of expert advice. Although consultants and vendors are always there, but even then the development team can perform some customizations because of the lack of knowledge of either business or the software.
Light (2005)	Vendors, sometimes, convince the consumer organizations that they have got the best product which suits their needs. Well, this is not always true. Now because of the lack of knowledge or understanding about the ERP package, management may well get into the trap of the vendor by purchasing the package which is having least-fit with the business processes and this may trigger the customization of the package.
Brehm et al. (2001); Holland et al. (1999); Light (2005)	ERP packages are generic products, which bring with them the, so-called, best practices of the industry. Organizations, sometimes, can perform modifications to the software to get the competitive edge and to move away from the mainstream, though it's risky.
Light (2005); Golland (1978)	Customizations can also occur as a form of resistance. People in an organization may not be willing to change their existing procedures. There may also be the fear of downsizing. This may force the development team to do certain modifications to the software.
Rothenberger et al. (2009)	If the ERP implementation team is inexperienced both in terms of understanding the ERP systems and the business processes, it may custom develop a functionality which is already available within the package.
Rothenberger et al. (2009)	An inexperienced team may not handle the resistance from the organization to limit the customization. One probable reason could be that team cannot convince the decision makers that keeping system to minimum modifications is very important for the organization and the advantages of BPR if it wants to achieve all the benefits.
Robey et al. (2002); Al-Mudimigh et al. (2001); Davenport (1998); Rothenberger et al. (2009).	Higher reliance on consultants, more the chances of customization. This is coupled with inexperience team. Because consultants come from outside world, they may not understand the whole business processes. This also re-iterates that involvement of operating departments is very necessary so that a balance team can be created with sufficient technology and business knowledge to avoid modifications to the software.
Rothenberger et al. (2009)	Managing ERP knowledge is very important. ERP projects are usually long-term and take considerable amount of time to finish. Organizations benefit through learning curve during the project either by consultants or the vendors itself. Now, if this knowledge base leaves the company, leaving behind the insufficient know-how of the systems, it can lead to the customizations in the form of maintenance, which can create further future problems.
Soh and Sia (2004); Kholeif et al. (2007).	Different countries have different norms and different working cultures. ERP systems are mostly developed by western vendors. Installing a western developed package in a different country with different norms might require customization of the package.
Kholeif et al. (2007); Greenwood and Hinings (1996).	Sometimes, market pressure force companies to do the customization. For example, a company may have to change its inventory management procedure radically due to long-term unprecedented occurrences.

Table 2.4: Different reasons for customizing an ERP system

2.6. SUMMARY OF GAPS IN THE EXISTING LITERATURE

The literature review chapter has highlighted the inability of many organizations to realize benefits from their ERP systems. CIOs continue to be frustrated by their inability to justify the value of ERP systems; what they do or contribute to the organizations. Whilst reviewing, a number of gaps were found in the existing literature. The following is a summary of the identified gaps that will set the basis and focus for the key areas of investigation in this research:

- **Evaluation of IS/IT Projects**

It is of paramount importance to evaluate the benefits from IS/IT projects. However to date, the dominant focus of IS success measurement, in practice, remains on the inputs and processes, rather than the outcomes. The other strand of research that has attempted to evaluate the benefits from system development projects, tends to evaluate them from financial perspectives using different ratios. This analytical evaluation doesn't reveal the full picture behind the variability in benefits realized. This applies to the ERP discipline as well; where majority of evaluative research has been conducted using surveys. This might be one potential reason for low realization of benefits from ERP projects.

- **Adoption of Benefits Management Approaches**

It has been argued that organizations should adopt benefits management approaches in order to increase the chances of benefits realization. However, in practice, not many organizations are following these approaches. It is assumed that this might be due to the difference between theory and practice. Also, there are very few empirical studies

examining what organizations are doing, in actual, to manage the benefits from the system development projects.

- **Benefits from Customizations**

A few existing studies have attempted to establish a link between customization, and the resultant level of benefits. However, these studies don't consider how different types of customizations can lead to different types of benefits. More than 85% of ERP system implementation undergo such customizations. It is envisaged that a lot of these customizations are done purely for the purposes of getting the benefits. Therefore, it needs to be investigated how customization can fit into the existing BM models to improve the likelihood of benefits being realized, from ERP systems.

This research intends to address the identified gaps by, first of all, using BDN as a diagnostic tool to evaluate the operational systems. The evaluation will be done through interpretative means rather than the financial and analytical measures. It is envisaged that this will not only help to evaluate the benefits; but it will also be useful to understand the process of benefits realization by focusing on the activities that are deemed necessary to improve the chances of benefits realization. In order to increase the acceptance of BM approaches, this research will also investigate the reasons which inhibit the organizations to adopt the BM approaches. Also, to date, there has been very little empirical investigation of what organizations are doing in practice to manage benefits from their IS/IT investments. The research aims to fill this gap by investigating the measures taken by three organizations to manage the benefits from their system development projects. Finally, it is important to explore how ERP customization may fit into existing models and frameworks for managing the entire benefits management process. This study will address this gap by investigating

the types of customization of ERP systems. These insights will then be considered in terms of the relationship between customization type and the realization of benefits from ERP investments.

CHAPTER 3: RESEARCH METHODOLOGY AND DESIGN

3.1. INTRODUCTION

This chapter details the methodological approach adopted to address the research questions of this project. The chapter, first of all, describes different philosophical perspectives for conducting the research in social sciences before discussing the approach adopted for this project. Next, the rationale is provided for selecting the qualitative approach for this study. The chapter then details the different methods available to conduct the qualitative research. The next section discusses the reasons behind choosing the multiple case study approach for this study. The subsequent sections describe the selection of cases and conducting the interviews. The chapter concludes by a discussion of the data analysis method selected for this study.

3.2. PHILOSOPHY

This *research* project is exploring for insights that can help organizations to improve benefits realization from ERP systems. This section considers different philosophical perspectives present in social sciences. It is envisaged that this exercise will help to understand “what constitutes ‘valid’ research and which research methods are appropriate” (Myers, 1997). Myers (1997) has identified and summarized the three broad perspectives, which can be adopted, when conducting research in information systems, namely: positivist, interpretive and critical studies. There follows a brief discussion of each of these perspectives:

3.2.1. POSITIVIST PERSPECTIVE

Positivist research advocates the application of the methods of natural science to study the social reality (Bryman, 2012). Bryman summarizes the key principles of positivist research as

'phenomenalism', 'deductivism', and 'inductivism' (Bryman, 2012). Bryman differentiates that the role of the theory is to generate hypotheses and the role of research is to test theories enabling the provision of the materials for the development of laws (Bryman, 2012). Positivist paradigm conceptualises that things can only exist if they can be directly observed; any proposition which cannot be directly empirically tested does not exist. This notion of positivism is known as *verifiability* (Lee and Lings, 2008).

Orlikowski and Baroudi (1991) classify those studies as positivist which adopt formal propositions, quantifiable measures of variables, hypotheses testing and the drawing of inferences about a phenomenon from the sample to a specified population. Thus, there is a supposition in positivist research that the reality is present objectively and it can be described through measureable properties that are independent of the researcher. In order to increase the predictive understanding of a phenomenon, the positivist research attempts to test the related theories (Myers, 1997). Positivist research believes that science is or should be mainly concerned about the explanation and the prediction of the observable events. The emphasis on explanation, prediction and proof are the key elements of positivist research (Maykut and Morehouse, 2002).

The majority of IS research has been conducted from the positivist perspective (Orlikowski and Baroudi, 1991). However, according to Bernstein (1976), "*the positivist model of what science is has been shown to be unfeasible and thereby discredited*". The ideas of testability and verifiability rules out the consideration of many theories and concepts of social sciences (Lee and Lings, 2008: p31). Further, the positivist research paradigm assumes "the world as simple or at least potentially simple" (Maykut and Morehouse, 2002). It is, sometimes, necessary to take the complex view of the world to obtain the trustworthy explanations.

This concern is being catered for by the research conducted from interpretive perspective as explained in the next section.

3.2.2. INTERPRETIVE PERSPECTIVE

Interpretivism provides an alternative perspective to the dominant positivist perspective.

Bryman (2012) explains that social sciences are fundamentally different from natural sciences because of their explicit focus on “people and their institutions”. Therefore, the study of social sciences requires the use of different research procedures, as opposed to the natural sciences (Bryman, 2012). To fill this void, interpretive research, usually, attempts to understand a phenomenon through the understandings that people have towards it (Myers, 1997).

In IS research, interpretive methods are “aimed at producing an understanding of the context of the information systems, and the process whereby the information system influences and is influenced by the context” (Walsham, 1993). The key difference between interpretive and positivist perspectives is the emphasis on better understanding, rather than attempting to fully explain, a phenomenon (Lee and Lings, 2008). The interpretive research specifies that the researcher must immerse him / herself in the context to fully understand the meanings and experiences of the phenomenon being studied (Lee and Lings, 2008). An interpretive researcher may also come up with unexpected findings (Bryman, 2012). There is also a recognition amongst interpretive researchers that meanings and interpretations of reality may change over time due to changes in the context and circumstances (Orlikowski and Baroudi, 1991). Thus, in interpretive research, the dependent and independent

variables are not predefined; instead the focus is “on the full complexity of human sense making as the situation emerges” (Kaplan and Maxwell, 2005).

There is an assumption in interpretive IS research that “the social world is produced and reinforced by humans through their action and interaction” (Orlikowski and Baroudi, 1991). Further, the interpretive studies don’t aim to generalize the findings of a particular phenomenon. In fact, the aim is to understand the “deeper structure of a phenomenon” which can be leveraged to inform the other situations (Orlikowski and Baroudi, 1991). Thus, in interpretive research, “it is the job of social scientist to gain access to people’s ‘common-sense thinking’ and hence to interpret their actions and their social world from their point of view” (Bryman, 2012).

3.2.3. CRITICAL PERSPECTIVE

According to Orlikowski and Baroudi (1991), the critical research perspective differs from positivist and interpretive perspectives as a “critical researcher attempts to critically evaluate and transform the social reality under investigation”. One of the aims of critical research is to reveal the implicit assumptions underlying the “accepted ideas of ‘truth’ in a given social situation” (Lee and Lings, 2008).

From critical researcher’s perspective, the reality is produced and reproduced by the actors, in any particular research context (Myers, 1997). Thereby, in his role as a social critique, the critical researcher concentrates on “oppositions, conflicts and contradictions” of the contemporary society (Myers, 1997). It is envisaged that by concentrating and understanding these issues, critical researchers “can help to overcome oppressive social relations” (Bernstein, 1978).

Further, critical researchers believe that social reality is constituted historically. This implies that societies, organizations and human beings are not confined to exist in a particular state (Chua, 1986). By recognizing potential possibilities people can act to change their circumstances. However, critical perspective also believes that the “capacity to enact the change is constrained, because humans become alienated from their potential by prevailing systems of economic, political and cultural authority” (Orlikowski and Baroudi, 1991). Myers (1997) further explains that “although people can consciously act to change their social and economic circumstances, critical researchers recognize that their ability to do so is constrained by various forms of social, cultural and political domination”. However, despite its significance, there is a limited guidance available on the implementation of critical perspective (Lee, 1999a), and therefore it remains difficult to conduct (Lee and Lings, 2008).

3.2.4. PHILOSOPHICAL APPROACH FOR THIS PROJECT

A clear philosophical position is the indispensable starting point in the social sciences research (Trigg, 1985). It is because “where you stand can influence what you see” (Fischer, 1998). The three philosophical perspectives discussed in the previous sections each have their own strengths, weaknesses and uniqueness. Although these research perspectives are different philosophically, it is not always possible to differentiate between them in the practice of social sciences research (Myers, 1997). Myers also highlights the disagreements that exist about whether these research perspectives are completely distinct, or whether they can be combined within a single study (Myers, 1997). Thus choosing one of these approaches, in social sciences research, is not a straightforward task.

Traditionally, most IS research has been conducted from positivist perspective (Orlikowski and Baroudi, 1991). However, due to nature of the research objectives, this research adopts

the interpretive perspective. This approach helps interpret different events based on different ideologies of researchers (i.e. it promotes the belief that there is no objective world). One of the motivations of this research project is to better understand the process of benefits realization. Existing studies have attempted to do this but most of them have adopted financial measures to do this. Whilst this is useful in appraising the overall benefits, but this approach does not provide any meaningful insights into how these benefits are derived. Consequently, this research project aimed to explore the understanding of the key stakeholders of ERP industry about benefits realization from their contexts. The interpretive research suited well with this aim as “it is a situated activity that locates the observer in the world interpretative, material practices that make the world visible (Denzin & Lincoln, 2008). Thus interpretive approach enabled to explore the insider’s perspective of the stakeholders of ERP industry. This is in contrast to the positivism; as positivist approach aims to take the outsider’s perspective and gain the knowledge of an external reality without considering individual’s experiences and their contexts.

3.3. RESEARCH METHODOLOGY

A qualitative methodology is considered to be most suitable for interpretive research (Lee and Lings, 2008). Qualitative research enables the researchers to present a complex textual description of how participants experience a given research issue. This type of research also allows the researchers to observe the human side of an issue e.g. opinions, emotions, relations, beliefs (Mack et al., 2005). According to Cresswell (1994), a qualitative study is “an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted

in a natural setting”. Another definition is provided by Bryman & Bell (2003): “A research strategy that usually emphasizes words rather than quantification in the collection and analysis of data” (Bryman & Bell, 2003). Thus, qualitative research refers to “the what, how, when, and where of a thing – its essence and ambience” (Berg, 2004). Berg further explains that qualitative research enables the researchers to explore “the meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things” (Berg, 2004).

Qualitative research is commonly used in exploratory studies. It enables the researchers to explore and observe the unquantifiable facts from the respondents. Further, the aim of qualitative research is to develop a holistic view of the phenomenon and the interpretations which are contextually-embedded. This implies that the qualitative researcher needs to have an awareness of the context in which the phenomenon is being studied. The qualitative approach was chosen for this project because of its appropriateness for exploring the research aims of this project. There were several other reasons which led to the selection of qualitative approach for this project. The first reason which influenced the selection of qualitative methodology was the exploratory nature of this research project. Existing studies tend to evaluate the benefits from system development projects through financial perspectives using different ratios (Henedricks et al., 2007; CHEN et al., 2009; Poston et al., 2001; Matolcsy et al., 2005; Madapusi et al., 2010; Hunton et al., 2003; Velcu, 2010; Annamalai et al., 2011; Yang et al., 2009; Hawking at al., 2004; Ross et al., 2000; Kale et al., 2010). This approach does not reveal the full picture behind the variability in benefits realization from different organizations. In contrast, this research is aimed to exploring the interactions between different organizational factors which are deemed crucial for

successful benefits realization from system development projects. This study involves collecting rich and in-depth data to explore these interactions.

The exploratory nature of this research also favoured the flexibility of a qualitative approach. Initially, qualitative research is loosely structured within a framework of ideas, thus allowing questions to evolve as the research progresses (Cassell and Symon, 2004). This meant that, during the collection of the data, it was possible to add or modify the questions to achieve a clear focus. Another reason to choose qualitative research was its ability to explore the subjective meanings of social action and to uncover individual sense-making processes. The aim of this research is to understand the respondent's frame of reference to reveal their meanings, interpretive systems and sense-making processes (Burrell and Morgan, 1979). More specifically, this research aims to understand each respondent's perception of the process of benefits realization, from their own individual perspective. This implies exploring the respondent's interpretations, experiences and perceptions, from their context, which can help to increase the likelihood of benefits realization.

Like any other approach, qualitative research cannot be conducted in a vacuum. A methodology needs to be selected to conduct the qualitative research. According to Myers (1997), "a research method is a strategy of inquiry which moves from the underlying philosophical assumptions to research design and data collection". There are various methods available that can be utilized for the purposes of the qualitative research (Berg, 2004). Myers (1997) have described the following four methods that can be applied in IS research. Following is a brief description of these methods.

3.3.1. ACTION RESEARCH

According to Rapoport (1970), “action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration” (Rapoport, 1970). This collaborative approach enables the researchers to take systemic actions to resolve specific problems. Further, action research “endorses consensual, democratic, and participatory strategies to encourage people to examine reflectively their problems or particular issues affecting them or their community” (Berg, 2004).

In action research, researchers and the members of social setting collaborate to diagnose the problem and the emergence of the solution based on the diagnosis i.e. in action research, the collection of data can involve the diagnosis of the problem and the emergence of the solution (Bryman, 2012). Action research employs traditional data gathering strategies. However, the orientation and purpose of action research are slightly different: it does not elaborate the phenomena from the researcher’s perspective, in fact, in action research the collaboration is made with the very participants that are to be studied (Berg, 2004).

In action research, a researcher acts as an agent for change in a particular situation. This implies that the researcher is not standing apart from the research, instead, he is the part of research himself. A key feature of the action research is that the theories created by action research are tested by the intervention in the research context (Lee and Lings, 2008). Finally, action research is mostly conducted in the subjects of social sciences e.g. business and management research. In most cases, the action research is conducted to change or

improve a situation. The situation can be identified either by a researcher or by a related party (Berg, 2004). However, it is sometimes critiqued for lacking rigour and for being too partisan in its approach (Bryman, 2012).

3.3.2. CASE STUDY APPROACH

A case is a “single social setting”. Therefore a case study is the “detailed analysis of a single case” (Lee and Lings, 2008). Case study is a preferable approach when researcher “has little control over events, and when the focus is on a contemporary phenomenon within some real-life context” (Yin, 1994). In qualitative information systems research, the case study is most commonly used research method (Orlikowski and Baroudi, 1991).

Case studies can be conducted on an individual, a group or an entire community. However, it is important to note that case study is not a data gathering technique in itself. In fact, it’s a methodological approach that can include different types of data gathering methods. These approaches can include: document reviews, life histories, oral histories, participant observations and in-depth interviews (Berg, 2004). Case study approaches tends to take the holistic view and can be used to study any phenomenon (Gall, Gall and Borg, 1999). Despite the critique of case study approach about its rigor, many have argued that the case study approach can enable to go underneath the apparent surface and gather the rich context-based information to study a phenomenon (Orlikowski, 1992; Walsham, 1993).

3.3.3. ETHNOGRAPHY

Ethnography is a process that aims to “describe and interpret social expressions between people and groups” (Berg, 2004). In the ethnographic research, the researcher is immersed

in the midst of the phenomenon that is aimed to be studied. It enables the researcher to examine the phenomenon from various perspectives as perceived by the participants in the study (Berg, 2004); thus making the observations of the phenomenon studied from the social and cultural context of the participants (Myers, 1997).

One of the main differences between the case study approach and ethnographic approach is the extent to which the researcher immerses him / herself in the lives of participants from the phenomenon being studied (Myers, 1999). In the case study approach, the data is mainly collected through interviews supplemented by the organizational documents. However, in ethnography, these data sources are further supplemented by the data collected through participant observations. Further, an ethnographic research is required to spend long periods of time in the “field” and collect detailed observational evidence (Myers, 1999). These detailed observations are important not only because of their significance to the participants of the study but also because these observations provide accounts of context in which participants’ behaviour take place (Bryman, 2012).

3.3.4. GROUNDED THEORY

Grounded theory has been defined as “the theory that was derived from data, systematically gathered and analysed through the research process. In this method, data collection, analysis, and eventual theory stand in close relationship to one another” (Strauss and Corbin, 1998). It is important to emphasize that grounded theory is not a theory in itself; it is an approach that is used to generate the theory from the data (Bryman, 2012). Because of its ability to develop process-oriented descriptions and explanations of the phenomenon

being studied, grounded theory approach is being increasingly used in information systems research (Orlikowski, 1993).

One of the key differences between grounded theory and other research approaches is the suggestion of continuous interplay between data collection and data analysis; a specific approach for theory development (Myers, 1997). This implies that development of theory from data is an iterative process (Bryman, 2012). However, although the emphasis is given on the importance of allowing theoretical ideas to emerge from the data, yet majority of the qualitative research is conducted to test the theories (Bryman, 2012).

Thus, qualitative research cannot be conducted in a vacuum. The research has to choose a methodology to actually conduct the research. This section has discussed the four main methodologies: action research, case study, ethnography and grounded theory. Next section details the research design of this project.

3.4. RESEARCH DESIGN

According to Yin (1994), “A research design is the logic that links the data to be collected (and the conclusions to be drawn) to the initial questions of the study” (Yin, 1994). Further, the design is concerned about “what questions to study, what data are relevant, what data to collect, and how to analyse the results” (Yin, 1994). This section discusses the research design for this project. The section begins with the research gaps and how they are linked with the objectives. The subsequent sections present the outlined research framework and choice of analytical framework for this study.

3.4.1. OBJECTIVES OF RESEARCH:

Despite advances in technological spheres, many organizations fail to exploit the full potential of ERP systems. There is a growing recognition that this situation can be improved by adopting the benefits management approaches. However, on the contrary, organizations tend to ignore these approaches in system development projects.

Existing studies have attempted to evaluate the ERP benefits through analytical measures. Whilst this research is useful, it does not explain the varying level of success by different organizations. Also, existing studies have attempted to establish the link between customization and benefits. However, these studies ignore the individual types of customizations and their resultant impact on benefits.

Based on the research gaps, followings are the specific objectives of this research project:

- **Objective 1 [O1]:** To assess the full range of benefits, which may be realized from ERP projects, using interpretative evaluation methods.
- **Objective 2 [O2]:** To explore and understand the approaches that organizations are adopting to manage the benefits that might be leveraged from there ERP investments.
- **Objective 3 [O3]:** To explore and understand the reasons why some organizations may not be adopting and following any explicit benefits management approach in their ERP projects.
- **Objective 4 [O4]:** To further understand the role of organisational change in leveraging benefits from ERP implementations.

- **Objective 5 [O5]:** To understand the role of system customisation in leveraging benefits from ERP implementations.

3.4.2. OUTLINED RESEARCH FRAMEWORK

Based on the research objectives, figure 3.1 lays out the research framework for this project.

This framework is supported by the highly summarized and synthesized information gathered from the various literature review sections, presented in chapter 2. The framework is designed to work as a conceptual guide for conducting this study so that the objectives of this research are fulfilled. Following is a brief explanation of the framework:

Because of the low benefits realization from IS/IT projects, it has been argued that organizations should adopt benefits management approaches. The authors of these approaches advocate that adoption of these approaches can increase the likelihood of benefits realization. However, the adoption of these approaches remains typically low in ERP development projects. One of the objectives of this research is to determine why some organizations might not be following these approaches (O3). This research also aims to explore the approaches that organizations are adopting to manage the benefits that can be leveraged from ERP investments (O2).

Due to evolving business requirements, customization of an ERP package is almost inevitable these days. Consequently, another objective of this study is to determine the impact of individual customization types on the benefits, ultimately realised. Existing studies have not explicitly attempted to establish this relationship (O4). Further, this study aims to explore how customization can be incorporated within benefits management approaches.

It has been long established that organizations need to transform their processes in order to realize the benefits from their IS/IT investments. Indeed, business transformation is considered a vital element of the benefits management approaches. Thus, another objective of this study is to understand importance of business transformation in leveraging the business benefits from the ERP development projects (O5).

One of the objectives of this study is to evaluate the benefits that can be realized from ERP implementation projects. Instead of focussing on financial ratios, the emphasis of this study is on interpretive evaluation, to gain better insights into the variety of benefits that might ultimately be leveraged from ERP investments (O1). As discussed in previous sections, the benefits can be realized both through customization and business transformation. This study aims to understand whether its customization or business transformation or a combination of both that is most likely to increase the chances of benefits being realized. The next section of this report explains the choice of analytical framework for this research project.

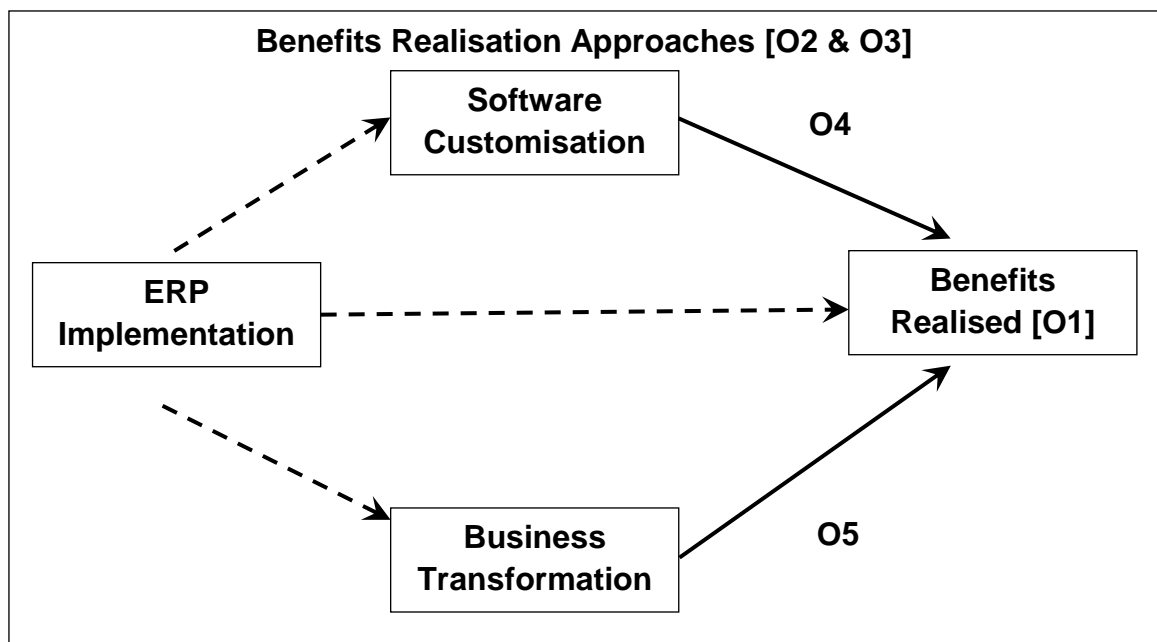


Figure 3.1: Initial Research Framework

3.4.3. CHOICE OF ANALYTICAL FRAMEWORK

In the section 2.4 of literature review chapter, three different benefits management models were discussed. These three BM models emphasize the continuous involvement of stakeholders with regular reviews in the planning stages. These models also emphasize the iterative nature of the BM process, recognizing that internal and external changes may require modification of benefit plans and stakeholder expectations. However, compared to the MBI, the ABR and Cranfield models provide more detailed guidance for the creation of benefits plans through utilizing ‘pictures’ and network diagrams respectively. But unlike the Cranfield’s BDN, the ABR ‘pictures’ are not necessarily graphical representations. In fact, they are more likely to be the lists of key factors that require attention and monitoring, such as critical success factors, identification of primary stakeholders, specific benefits metrics and major risks. The ABR also gives little attention to the role of IT-enabled organizational

changes in the benefits management process. The MBI does recognize the importance of re-designing business processes but only at a conceptual level. The Cranfield's BDN is the only method that provides a clear causal path capturing planned relationships between technical functionality, organizational changes and the benefit realization. Consequently, for this study, it was decided to adopt the Cranfield Process Model; of which BDN is the central element. The more detailed guidance provided by the Cranfield Process Model may also explain why it is one of the most well-known and is widely cited in the BM literature (Braun *et al.*, 2009). Although, Ward et al (1996) suggest that through using their model, it would be possible to diagnose why some projects are successful in delivering benefits and others are not; but the Cranfield Process Model is still largely used as a planning and management tool. Therefore, for this project, BDN was used as an evaluation tool to analyse the operational ERP systems in three different organizational settings. More specifically, BDN was intended to apply as an analytical tool to carefully explore the elements of summarized framework and, ultimately, the research objectives. It was envisaged that using a sophisticated analytical tool will make both an appropriate and novel mechanism for exploring the research objectives. This might also generate important new insights about the effectiveness of BDN; this can ultimately lead to its increased adoption. The analysis derived through BDN was qualitative and interpretative. It was envisaged that this would help to determine whether a set of actions could be derived from the analysis to increase the likelihood of increased benefits realization.

This research was ultimately conducted in two distinct phases; the following sections briefly present the rationale for conducting each phase.

3.5. PHASE 1

The first phase was conducted because when attempting to operationalize the research questions a number of practical issues were identified that required attention before the main research was conducted. These included limited amount of literature on the adoption of benefits realization and the lack of clarity, in the existing literature, about the relationship between customization types and the benefits realized. Because of the exploratory nature of the research objectives, 'Qualitative Survey' method was used in phase 1 (Jansen, 2010). This type of survey has been recommended to explore the "meanings and experiences" (Fink, 2003). To conduct the phase 1, a semi-structured interview approach was adopted amongst different types of interviews (Bryman and Bell, 2003). Full details of this phase, the research design and data analysis are discussed in Chapter 4.

3.6. PHASE 2

In this project, phase 2 was conducted to build on the findings from phase 1; the exploratory phase. Although, the appropriateness of other qualitative research methods can be debated for the purposes of this research project, the case study approach was chosen for this second, more detailed, phase. The main rationale was that it was not practical to adopt other methods for this study. For example, ethnographic approach could have been inappropriate because of the practical limitations of 'immersing' in individual organizations. Because of the profile of the individual organizations, it would have been unrealistic to observe and experience the practices of benefits management in these organizations in their original settings. As described in section 3.3.2, Case study is a preferable approach

when researcher “has little control over events, and when the focus is on studying a contemporary phenomenon, within some “real-life context” (Yin, 1994). Further, the ethnographic approach could also have created difficulties in terms of time management. Similarly, action research was also impractical for this research because of the difficulty of getting organisations to allow a researcher to act as ‘change agent’.

The case study approach is not a new way of data collection and data analysis. Indeed, it has been widely used in qualitative research (Berg, 2004). Case study is a preferable approach when the researcher is trying to find the answer of “how” and “why” questions (Yin, 1993). Answers to such questions can be used to develop an informed interpretations and analysis of the events that have unfolded over the time. A qualitative researcher attempts to discover “the manifest interaction of significant factors” by focusing on a single phenomenon. Further, the research is also concerned with the complexity and the specific nature of the case being studied: “the emphasis tends to be upon an intensive examination of the setting” (Bryman, 2012). Additionally, through case study approach, the qualitative researcher can capture patterns and more latent elements that will be difficult to identify otherwise (Berg, 2004).

The case study is the most commonly used method in information systems research (Orlikowski and Baroudi, 1991). This is also true for ERP research, where the majority of the studies have been conducted using case study approach. For this research project, qualitative multiple case study method was adopted. According to Yin (1994), “The evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust” (Yin, 1994). Multiple case study approach was considered to be the most effective way of comparing and contrasting the findings of

individual organizations to interpret and understand the process of benefits realization.

Case study approach also enabled to uncover the storey from the perspectives of the participants involved in the process of benefits realization.

The case studies conducted were built on the findings from phase 1. This enabled a more in-depth, richer understanding of the process of benefits realization and the impact of organizational context on this process to be derived. In this project, three case study organizations were selected because of the extensive use of ERP, in their operations. In these organizations, ERP was not only important for their day to day operations but also for meeting the strategic objectives. Another selection factor was their willingness to provide access to projects and the people related with them. All three organizations are mainly based in UK. The main source of data collection was interviews, focussing upon two specific projects, in each case, and the organizational context in which each project was conducted. Efforts were also made to obtain, where possible, additional evidence such as project plans and business cases.

3.6.1. COLLECTING EVIDENCE

An interview can be defined as “a conversation with a purpose”. The aim of the conversation is to collect information (Berg, 2004). There are three different types of interview techniques that can be utilized for the purposes of data collection. These types are, sometimes, referred as “the family of qualitative interviews” (Rubin and Rubin, 2012). The first type is generally known as structured interviews. In structured interviews, the researcher uses a ‘formally structured’ interview guide to ask the questions. The researcher tries to elicit the responses for a specified set of questions from each respondent. The

rationale behind this approach is to have responses that are comparable (Berg, 2004: p78). However, because of a pre-determined focus, the structured interviews can limit the emergence of new insights in the phenomenon being studied (Breakwell, 1990). The next type of interview is known as unstructured interviews. Unstructured interviews “do not utilize scheduled of questions and are located on the imaginary continuum at the opposite from standardized interviews” (Berg, 2004). In unstructured interviews, a researcher at most uses an *aide mémoire* as a set of prompts to deal with certain range of topics (Saunders et al., 1997). It is envisaged that in unstructured interviews, appropriate and relevant questions will arise themselves through the interactions during the interview. The final type of interviews is known as semi-structured interviews. In this technique, open-ended questions are used. This enables the researcher to not only elicit the responses for the actual questions but also to explore the interviewee’s opinions about the events (Yin, 2003). Further, in semi-structured interviews, the researcher asks the question in a consistent order but have the freedom to digress and probe beyond the answers to his prepared questions (Berg, 2004). There remains a lot of flexibility to ask follow-up questions for individual points (Lee and Lings, 2008). Consequently, because of their appropriateness, semi-structured interviews were used as the main source for collecting the evidence in phase 2. In the phase 2 of this research project, semi-structured interviews were the main source of collecting the evidence from three case study organizations. It was envisaged that using semi-structured interviews will enable the researcher to obtain the rich information from the three organizations. The emphasis was to explore the events that unfolded in three individual organizations from the perspectives of the employees involved in the projects. Additional efforts were also made to collect additional evidence e.g. business plans, project plans, project review documents.

3.6.2. DESIGN OF THE INTERVIEW GUIDE

As we are using BDN as an analytical tool for this study, the interview guide for phase 2 was, mainly, based on the Revised BDN stemming from the findings from phase 1. A copy of the guide is attached in appendix 4. The interview guide was, mainly, divided into three different parts. The first part consisted of the introductory questions which asked informants about their roles within the organization and, more specifically, within the projects. The second part of the interview guide was focussed upon the elements of the analytical tool. In this section, the informants were, first of all, asked for their views about the business objectives that were sought from each project. The next question was asked to get the views of the informants about the business changes that were deemed necessary for the implemented projects. The informants were asked to what extent, in their roles, they have witnessed organizations going through business transformation. In the next question, the informants were also enquired about the planned benefits they have witnessed in their respective organizations.

The next question of the interview guide was designed to ask informants their views about the inhibitors that have occurred during the system development projects. The informants were then asked about the IT solutions that were implemented in their respective organizations. In the next question, informants were asked about the customizations performed on the implemented solutions. The informants were encouraged to provide examples of customization that were deemed necessary to get the benefits. Finally, the informants were enquired about the emergent benefits. The final part of the interview guide was designed such that the informants could revisit any area that they thought

required further elaboration or which had not been fully explored during the interview. The researcher also used this part to clarify any ambiguities that had surfaced during the interview.

3.6.3. SAMPLING AND SELECTION OF ORGANIZATIONS

Quantitative research, generally, aims to get large samples for a population representation (Miles and Huberman, 1994). However, in qualitative research, sampling is usually small and purposeful. This implies that the information collected through qualitative sample is not the representation for the whole population. In this research, the selection of cases was determined by the objectives of the research questions (Miles and Huberman, 1994).

The three organizations selected for this study are all major players in their respective industries; the first two are the major utility companies and the third organization is a major manufacturing company in the aerospace sector. The three case study organizations were selected because of the extensive use of IT in their operations. In these organizations, IT was not only important for their day to day operations but also for meeting the strategic objectives. Another selection factor was the willingness to provide access to projects and the people related with them. All three organizations are mainly based in UK. Further details about these organizations are provided in chapters 5, 6 and 7. The research was able to gain access to these organizations by using the business contacts of Loughborough University. Further, this study aims to understand the process of benefits realization. For this, it was essential that the selected organizations should have implemented and used the ERP systems. All three case studies had very sophisticated ERP solutions. They had been using their ERP systems for a number of years. This provided the opportunity to evaluate their practices in-

depth and in-details. The three organizations were also selected because of their willingness to provide access to projects and the people related with them. It is also important to highlight that the three case study organizations carried out their projects at different time periods and scales i.e. the span and reach of the projects, within organisational settings, varied amongst the three organisations. More specifically, EnergyCo carried out the majority of work from 2007/2008 till 2010/2011. In contrast, WaterCo conducted most project work from 1998 till 2005. Finally, ManuCo carried out the majority of work from late 90s till 2006. In order to develop a better understanding about the process of benefits realization, it was crucial to study the projects that had gone live for some time. This viewpoint is echoed by Brynjolfsson and Hitt (2003); who suggest that IT investments tend to payback only their costs in the first year. Significant benefits start to materialize over years 3 – 7.

The case study organizations also conducted changes to their systems post go-live. Whilst the timings of the project is important, this study aimed to develop interpretations and analysis of the events that unfolded in three organizations. In line with the interpretive stance adopted, this study was sensitive to the unique characteristics and the differences of the events that occurred across three organisations. It was envisaged that, different events in different contexts, would be helpful in generating individual insights to maximize benefits realization from system development projects. However, it was also envisaged that multiple case study approach might reveal some important broad and high level patterns across three organisations. These patterns would, ultimately, increase the analytical generalisability of this study's findings (Lee and Baskerville, 2003).

3.6.4. EXECUTION OF INTERVIEWS

In each case study organizations, before conducting the interviews, the interviewees were sent an e-mail to confirm the dates and locations for the interviews. The interviews were conducted at the local offices of the interviewees. Each interview lasted from 45 to 90 minutes to understand an issue from interviewee's perspective. Prior to each interview, the consent of the interviewee was obtained to digitally record the interview (Berg, 2004).

At the start of each interview, the interviewees were briefed about the areas that this research was aiming to explore. During the interviews, the questions were carefully asked from the interview guide and the prompts were given exactly in the way they were phrased in the interview guide. This approach was adopted in order to maximize the comparability of the answers provided. The interviewees were encouraged to provide specific examples to support their statements where possible. Although, the interview guide was followed during the interviews, some additional unplanned questions were used to prompt more relevant information where possible, and to encourage a natural flow of conversation. The interviewees were also encouraged to provide any additional information that could be relevant with the aims of this research project. Finally, the confidentiality was confirmed to interviewees. The interviewees were assured that while reporting the findings from the research, the identities of the interviewees would be removed and renamed with the pseudonyms (Berg, 2004).

3.6.5. ANALYZING THE EVIDENCE

An explanation of the data analysis for phase 1 is provided in chapter 4. In phase 2, the analysis of qualitative data followed the three parallel activities of data reduction, data display and conclusion drawing with verification (Miles and Huberman, 1994). Miles and Huberman (1994) further state that analysis is a cyclical and iterative process. They strongly recommend to start analysis early in the research (Miles and Huberman, 1994). This study interviewed participants from two utility companies and a manufacturing organization, details of which have been presented in chapters 5, 6 and 7 respectively. Whilst analysing the interviews from case studies, the strategy suggested from Miles and Huberman (1994) was adopted to draw and verify the conclusions.

It has been argued that the use of software packages in qualitative research creates a distance between the researcher and the data which leads to a reduction in 'closeness to data' (Tesch, 1990). This further implies that the researcher can be engrossed in the meanings offered by the software package and it is against the purpose of qualitative data analysis (Burton, 2000). However, the application of computer software packages is getting popular, in many fields, despite of the criticism of the use of these packages for qualitative data analysis. These packages help the analysis process in a more effective, rigorous and systemic way (Burton, 2000). It enables storage and retrieval of qualitative data, coding and sorting (Barzelay, 2007). In this research project, because of the iterative nature of the data analysis, manual data analysis would have become very cumbersome. Thus, for the coding purposes of the qualitative data, Nvivo was chosen in this study. Nvivo was chosen as it was very user friendly and there was plenty of support to learn it from the School of Business

and Economics, Loughborough University. For illustrative purposes, screenshots of Nvivo have been attached in appendices 5 and 6 for coding structure and an example of coding, respectively.

To achieve a *close-ness* to data, interviews were transcribed very soon after conducting them. This was helpful in recalling the conversation and events during the interviews. Once transcribed, the transcript for each interview was read to get a familiarity with the gathered information. As each case study progressed, a draft analysis and interpretation of the findings was developed (Silverman, 2000). Silverman describe that “unless you are analysing the data more or less from day one you will always have to catch-up” (Silverman, 2000).

The initial analysis was focused on the individual cases. It was considered important to get a close familiarity with the data to allow the “unique patterns of each case to emerge” (Eisenhardt, 1989). To attain this, the transcripts were read again to identify the underlying meanings of the respondents’ views. The important views from each interview transcript were then assigned with meaningful and descriptive phrases as *Codes*. This process resulted in a large number of codes. In order to reduce them, codes that related to each other were grouped together. Further, from this process, a series of themes were identified that were linked to research objectives. Through thematic analysis, it was possible to build a matrix of the findings for each case. The matrix created from interview transcripts represented informant’s views about project objectives, emergent benefits, planned benefits, business changes, enabling changes, organizational inhibitors and customization. Displaying informants’ views in matrix allowed us to gather all relevant information on one place such that their responses can be compared (Miles and Huberman, 1994). After this, an initial report was prepared for each case. In these reports, a detailed discussion of each project,

alongside the organizational context, was provided. The key findings from these reports were discussed with the sponsor from each case study. The findings from analysis were matched with the additional information gained through documents provided by the case study organisations. Finally, these findings were also matched with organisations' websites and press releases. This exercise was not only helpful to develop a consistent story but it was also valuable for the purposes of validity and reliability for the findings extracted from the interviews. This process of triangulation enabled us to gain accuracy and reliability about our findings (Yin, 1994).

After the with-in case analysis, a 'cross-case' analysis was conducted to understand the influences of organizational contexts on the research findings. The aim of cross-case analysis is to explore the patterns across the cases and to have a deepened understanding and explanation (Miles and Huberman, 1994). Final conclusions from research findings were drawn after the cross-case analyses. This is in-line with the suggestion of Miles and Huberman (1994); conclusion should be made at the later stages, rather than the early stages, of data analysis. The outcomes from cross-case analyses are presented in Chapter 8.

3.7. SUMMARY

This chapter, first of all, underpins the philosophical assumptions for this study. By underpinning the philosophical assumptions, the chapter discusses potential research methods that could have been applied to conduct this research. The chapter presents the rationale for selecting the multiple case study design and the semi-structured interview method to conduct this research. The chapter also discusses why and how three cases were selected. Further, there is also a description about the design of interview guide and

conducting the interviews. Finally, the chapter closes by presenting the approaches adopted for analysing the data collected in this research.

CHAPTER 4: FINDINGS FROM PHASE 1 – AN EXPLORATORY STUDY

4.1. INTRODUCTION

This chapter explains the first phase of this research project. During this phase, the exploratory research was conducted to explore and help clarify a number of important, yet under researched themes. Moreover, the findings from the exploratory phase were used to refine the analytical framework presented in previous chapter for the later stages of this research. The chapter starts off with the background section which explains the rationale for exploratory research. The subsequent section describes the methodology for this phase. The methodology section details the design of interview guide, selection of interviewees, execution of interviews and finally the data analysis approach. The chapter then presents the results in the form of the six main themes identified from the analysis. After the results, the next section discusses the main findings of the exploratory research. Finally, the chapter concludes with the revised research framework that will be applied in the next phase of this research.

4.2. BACKGROUND FOR EXPLORATORY RESEARCH

As demonstrated in section 2.1, the benefits typically realized from IT/IS implementations remain disappointingly low. A possible reason for this may be that the majority of methods that are used to evaluate the return from IT/IS investments adopt numerical approaches. It has been advocated that a potential solution to improve benefits realization from these investments is to adopt the benefits management approaches. There are three main benefits management approaches in the academic literature, namely: Active Benefits Realization (Remenyi et al., 1997); the Model of Benefits Identification (Changchit et al.,

1998); and the Cranfield Process Model (Ward et al., 1996). As discussed and justified in section 3.4, the Cranfield process model approach, of which the BDN is the central element, will be adopted as the analytical tool for this study. Although, there has been a limited amount of literature that has studied the process of benefits realization, for systems development projects in general and for ERP systems in particular; these studies have revealed that very few organizations have adopted these approaches. This important insight presents a strong argument for conducting an exploratory study to explore why organizations are not following these approaches. Consequently, the views of key stakeholders, in the ERP industry, were sought about their benefits management practices. This was done so by presenting an example BDN to the research participants and then recording their reactions to its potential efficacy. The BDN was presented to give an idea to the participants about benefits management approaches. Thus, in this exploratory phase, the informants were asked whether they have witnessed organizations adopting benefits management approaches in their respective roles and what were the shortcomings of these approaches. The informants were also asked about the issues that organizations face while trying to adopt benefits management approaches in the system development projects.

Also, as discussed in section 2.5 of the literature review chapter, existing studies had reported examples of different organizations that have realized benefits through customizing ERP systems. These studies have attempted to establish a link between ERP customization and benefits realization. However, these studies do not consider the effect of different types of ERP customization or how the influence of the type of customization is manifested in the realization of benefits. Consequently, it was considered important to explore the views of the ERP industry practitioners about the benefits that organization can

realize through different types of customization. It was envisaged that this would also be beneficial in establishing how ERP customization might fit into the existing frameworks for managing the entire benefits management process. Thus, this phase is aiming to address the following two objectives of this research project:

- **Objective 3 [O3]:** To explore and understand the reasons why some organizations may not be adopting and following any explicit benefits management approach in their ERP projects.
- **Objective 5 [O5]:** To understand the role of system customisation in leveraging benefits from ERP implementations.

It was envisaged that exploring these issues would help to address the practical concerns related to this research. Also, the results from exploratory phase would be beneficial to refine the research framework and the analytical tool (i.e. the BDN) for the next phase of this project.

4.3. METHODOLOGY

Because of the exploratory nature of the research objectives, ‘Qualitative Survey’ method was used in this phase (Jansen, 2010). This type of survey has been recommended to explore the “meanings and experiences” (Fink, 2003). In the exploratory phase research, semi-structured interviews were conducted with a number of key stakeholders from the ERP industry, to address the required objectives of this phase. It was envisaged that speaking with a range of stakeholders from different industries will provide a richer insight, to understand the research issues set at the outset of this phase. Amongst different types of

interviews (Bryman and Bell, 2003), the semi-structured interview approach was adopted because of the exploratory nature of the research. This section is mainly about the design and execution of this research instrument.

4.3.1. DESIGN OF INTERVIEW GUIDE

The interview guide was developed based on the limited existing literature on ERP customizations and benefits management. A copy of the interview guide is attached in appendix 1. The interview guide was divided into five different parts. The first part consisted of the introductory questions which mainly asked informants about their roles within the ERP industry and the number of years they have been in the ERP industry.

The second part of the interview guide was designed around the topic of benefits management. The informants were asked their views about the benefits management practices in the ERP industry. The next part consisted of questions to get the views of the informants about the business changes that are deemed necessary for successful realization of benefits from ERP systems. The informants were asked to what extent, in their roles, they have witnessed organizations going through business transformation. The informants were also enquired whether they have seen the benefits realization as a result of organizations changing their business processes.

The fourth part of the interview guide was designed to ask informants their views about different aspects of customization. The informants were encouraged to provide rationales for different types of customizations of ERP systems. The informants were also asked to provide their views about the existing types of customizations. Additionally, the informants

were asked to provide examples where customization was deemed necessary at both pre and post implementation stages.

The last part of the interview guide was designed such that the informants can revisit any area that they thought required further elaboration and which had not been addressed fully during the interview. The researchers also used this part to clarify any ambiguities that surfaced during the interview.

4.3.2. TARGETING THE INTERVIEWEES

The ERP industry can be broadly categorised into three main groups, the vendors that supply the ERP software, the system integrators that facilitate the implementation of the software in organizations and the client organizations themselves. Consequently, a variety of potential interviewees from all three stakeholder groups were approached to get more balanced and richer insights. Senior representatives were selected from each stakeholder group to understand their experiences with respect to ERP customizations and the adoption of benefits management approaches. Potential interviewees were contacted via e-mail, to seek their co-operation. The details of the constituents of each of the three stakeholder groups are presented below:

Vendors

The contacts of academics at Loughborough University were utilized to gain access to a major ERP vendor. All the interviewees held senior positions in the vendor company. The interviewees ranged from Quality Director to Implementation Consultants. In total, 7

interviews were conducted with the employees of this vending company. Full detail of all informants is provided in the table 4.1.

System Integrators

System integrators help organizations, as outside partners, to manage the system development projects. For the exploratory phase, personal contacts were used to engage with system integration consultancies. Again, senior representatives were chosen from these consultancies. In total, four interviews were conducted with system integrators. Full details of all interviewees are given in the table 4.1.

Client Organizations

Client organizations are the one who take the initiatives of implementing an ERP system. Different organizations were contacted that had implemented ERP systems. As a result, seven organizations showed willingness to participate in our research. The interviewees from these organizations ranged from Finance Manager to IT Director. In total, eleven informants spoke with us from client organizations. A detail of their roles is provided in table 4.1 under the section of clients.

Table 4.1: Interviews with ERP Industry Stakeholders

ID	Interviewee	Length
Vendors		
V001	Composite Developments Director	1 hr 30 mins
V002	Senior Implementation Consultant	55 mins
V003	Quality Assurance Manager	1 hr 5 mins
V004	Quality Director	1 hr
V005	Senior Implementation Consultant	45 mins
V006	Implementation Consultant	1.5 hr
V007	Implementation Consultant	1.5 hr
System Integrators		
SI001	Implementation Consultant	1 hr
SI002	Consultant Director	1 hr
SI003	Senior Implementation Consultant	1 hr 30 mins
SI004	Implementation Consultant	50 mins
Client Organizations		
CO01	CIO	1 hr 5 mins
CO02	Operations Manager	1 hr 40 mins
CO03	ERP User	45 mins
CO04	IT Director	1 hr
CO05	Program Manager	1 hr
CO06	Company Director	50 mins
CO07	Logistics Manager	1 hr 15 mins
CO08	Program Manager	1 hr 30 mins
CO09	Finance Manager	1 hr
CO10	Program Manager	1 hr 15 mins
CO11	Project Manager	55 mins

4.3.3. EXECUTION OF INTERVIEWS

Before interviews, the interviewees were sent an e-mail to confirm the dates and locations of the interviews. The location of the interviews varied with some interviews being conducted in the School of Business and Economics at Loughborough University and some being conducted at the offices of the interviewees. Each interview lasted from 45 to 90 minutes to get a detailed overview of the topics under consideration. Prior to each interview, the consent of the interviewee was obtained to digitally record the interview (Berg, 2004).

At the start of each interview, the interviewees were apprised of the overall theme of the interview. The interviewees were informed that the interview was aimed at exploring benefits management practices in the context of ERP industry and to understand different issues related with the benefits management approaches.

During the interviews, the questions were carefully asked from the interview guide and the prompts were given exactly in the way they were phrased in the interview guide. This approach was adopted in order to maximize the comparability of the answers provided. The interviewees were encouraged to provide specific examples to support their statements where possible. Although, the interview guide was followed during the interviews, some additional unplanned questions were used to prompt for further relevant information and insights, where possible, and to encourage a natural flow of conversation. The interviewees were also encouraged to provide any additional information that could be relevant with the aims of this research project. Finally, the confidentiality was confirmed to interviewees. The interviewees were assured that while reporting the findings from the research, the identities of the interviewees would be removed and renamed with the pseudonyms (Berg,

2004). In many cases follow-up emails were used, to help clarify or enlarge upon specific answers. For example, the composite development director was sent an email to clarify a customization example which generated a benefit for the client. Similarly, another email was sent to a CIO to get an example about the realization of an emergent benefit in her organization.

4.3.4. DATA ANALYSIS

The analysis of qualitative interviews in the exploratory research followed the three parallel activities of data reduction, data display and conclusion drawing with verification (Miles and Huberman, 1994). Furthermore, Miles and Huberman (1994) explain that the data collection alongside these three parallel activities is a cyclical and iterative process. In the exploratory phase, a total of 22 interviews were conducted with the key stakeholders of ERP industry. This resulted in collection of significant amount of data. Therefore, it was considered important to reduce this data. The purpose of this reduction was to organize the data in order to draw and verify conclusions (Miles and Huberman, 1994).

It has been argued that the use of software packages in qualitative research creates a distance between the researcher and the data which leads to a reduction in 'closeness to data' (Tesch, 1990). This further implies that the researcher can be engrossed in the meanings offered the by software package and it is against the purpose of qualitative data analysis (Burton, 2000). However, application of computer software packages is getting popular in many fields despite of the criticism of the use of these packages for qualitative data analysis. These packages help the analysis process in a more effective, rigorous and systemic way (Burton, 2000). For the coding purposes of the qualitative data, Nvivo was

chosen in this study. Nvivo was chosen as it was very user friendly and there was plenty of support to learn it from the School of Business and Economics, Loughborough University. For illustrative purposes, screenshots of Nvivo have been attached in appendices 2 and 3 for coding structure and an example of coding from phase 1, respectively.

To achieve the 'closeness to data', interviews were transcribed very soon after conducting them. It was envisaged that this would help recording fresher insights and conversations with the informants. After transcription, the transcripts were read to familiarize with the collected data. For data reduction, the important views from each interview transcript were then assigned with meaningful and descriptive phrases as *Codes*. This process resulted in a large number of codes. In order to reduce them, codes that related to each other were grouped together. Further, from this process, a series of themes were identified that were linked to research objectives. Through thematic analysis, it was possible to build a matrix of the findings from ERP industry stakeholders. Displaying informants' views in matrix allowed us to gather all relevant information on one place such that their responses can be compared (Miles and Huberman, 1994).

4.4. FINDINGS FROM PHASE 1

This section describes the findings stemmed out from the interviews. The results of the data analysis exercise identified six key themes, which were very apparent, in nearly all the interviews. The findings are complemented with the specific examples and comments provided by the informants.

4.4.1. LACK OF FOCUS ON BENEFITS-ORIENTED-APPROACHES

The informants highlighted that in order to successfully realize benefits, organizations should proactively engage in benefits realization management. This implies that organizations should adopt benefits oriented approaches, to continuously appraise benefits, in systems development projects rather than focusing on on-time and on-budget delivery of the system. According to one interviewee:

'... [He] will typically recommend at the beginning of the project to set the starting benchmarks. It's not going to happen [immediately] post-live but several years down the road, [the organizations should] measure those bench marks against what... [they] planned [at the start]...' (V002: Senior Implementation Consultant).

Despite of their perceived relevance, in practice the participating organizations have tended to ignore benefits management approaches. Another informant commented:

'...in my 15 years in this market, I continue to see a distinct lack of formalised benefits realisation management, indeed in some programmes it is actively ignored...' (SI03: Senior Implementation Consultant).

A potential reason of organizations not following these approaches was noted by another informant:

'...I have seen the [benefits management techniques] few years ago in a conference. To me, they lack reality. It [the benefits management technique] does have a level of academic weightage but when you go away...and work in a program environment which is three years long, it needs to be operational... and there is a level of science

behind it... I totally agree IT as an enabler but there are also other enablers... Because from the benefits delivery point of view, you not only have to understand your enablers but you have also got to understand.... What's going to stop the project...'

(CO05: Program Manager).

Several informants also stated that organizations, typically, lose the focus on benefits once the project is over. There is no real desire and urge to check and measure benefits. In fact, employees want to go back to their normal ways of working. The informants made the following comments about this concern:

'... If you think of in terms of...at the time the project is completed and gone-live, who is actually interested to demonstrate the benefits. The money is being spent, the program is being delivered, and the business is using it. People's focus moves to... "Where are my revenues and margins coming from". Now, this [implementation of an ERP system] was a huge effort [and] "I am exhausted. I want to get back to the business as usual". That last incremental step of "can I demonstrate the business benefits" is gone to the back of the cue, rightly or wrongly, that tends to happen...'

(V004: Quality Director).

'...I think...what tends to happen [once the project is over]... we are happy, we have achieved 90% or whatever else, tick the box, close the project out, close people bonuses and let's move on...' (V005: Senior Implementation Consultant).

'...Most companies would say that they have got KPIs that they wanna measure themselves against. How many are actually prepared to measure themselves varies quite a lot. Sometimes, it's just [a] talk...' (V007: Implementation Consultant).

Another interesting insight that emerged from this exploratory phase was the difficulty in isolating and identifying the benefits in the post 'go-live' phase of the project i.e. whether the benefits are due to the use of an ERP system or due to a marketing campaign. For example, the informants explained that:

'...The other challenge is, [for example] people [can] say... we are going to have a better informed sales person on the phone, [so that] we can provide some up sell opportunity or whatever. This is a process that we will deliver in the [ERP implementation] program and therefore we are going to get 5% increase in sales. Year 2... come[s] up, you have got a 5% improvement in sales, how many people in the organizations are gonna claim that it was their role that delivered that [5% increase in sales]? marketing, sales, production, IT... everyone is going to claim that and the truth is it's very difficult to tease out very specifically where the business benefit came from. The most that we can hope for, I guess, is that it [ERP system] is seen as a significant contributory factor...' (V004: Quality Director).

'...The difficulty comes when its saying was that [benefit] only down to the solution or was that [due to something else]. And that is a challenge. I think it's almost impossible to say [that the benefit came] solely because of system implementation...' (V003: Quality Assurance Manager).

Thus, it is clear from the evidence provided by the informants that, although, the benefits are important for organizations but there is limited motivation in these organizations to adopt any benefits oriented approaches. A potential reason for this might be, the inability of these approaches, to be implemented in real project settings. Additionally, according to the informants, the organizations generally don't show an interest in appraising the benefits

realized through the ERP systems. However, it is sometimes, also very difficult to identify the actual source of the realized benefits.

4.4.2. BENEFITS REALIZED THROUGH BUSINESS TRANSFORMATION

A number of informants indicated that in order to successfully realize benefits from systems development projects, business transformation is very crucial because benefits don't emerge simply by just having a technology. One informant explained the focus on organizational changes carried out as part of an ERP system implementation:

'...So there is quite a lot of tension [i.e. importance] given to the human side because we were very careful not to present this as an IT project, it's not an IT project, it is about actually how we change our business, it is about that transformation, it is all about our new way of working and our organization, it is about those sort of things and they are very specific to people...' (CO08: Program Manager).

Several informants, from both vendors and client organizations, provided the example of business changes that were done alongside the implementation of the ERP systems to get the benefits. These included centralization of business processes, re-design of job roles and changes in organizational structures. The informants made the following comments:

'...They went from very de-centralized, different departments running on their own, to set the procedures and processes to be more combined...the metering department in a utility company in old days could be run on its own, it could have its own manager hierarchy and very little interaction with the customer services function, more of a hands off rather than working together standpoint. When the systems

come together [then] the processes are integrated and the data is integrated. As long as the same people are requesting a field's service, could be that people that are doing the field service are all in the same department. So just changed from decentralized to centralized...' (V005: Senior Implementation Consultant).

'...The other thing you will find is that job roles are often defined around how [ERP] works...there is... a department called DRP (Distribution Requirement Planning) department which is actually a transaction in [ERP] to use DRP, that's basically allocating the goods in the factories in UK, to make sure that they get to the right ones. So the team is actually called the DRP team. We also [created] the Masters Data guys and Plant Coordinators, so specific job roles that are very [ERP] related and driven by the way [ERP] works...' (CO03: ERP User).

'... [The] other thing [ERP] enabled [Engineering Firm] to do... [was to move] away from being site based to be a product based [organization]... City A was a defence factory... City B was civil ... it was mixture of bits& pieces and that meant the system that defence ran on was one [and the civil ran was another]... So [due to ERP], it meant that we could set up turbines as a business and the turbine parts that [are made]...in City A... [and]... in City B... all could be on same system, so it allowed us to split the business organization. Instead of being geographic, we now had the ability to split by product. So you could create different sort of organizations within [Engineering Firm] that may be you couldn't have done if you were on separate systems...' (CO04: IT Director).

'...So the decision was made to go with SAP and I was logistics director in one of the organizational units...[so as a result of implementation] we split them down [i.e. the

organizational units] within the company into functional groups which meant that for the first time, you had the design engineers, you have the people who made it, you have the supply chain with it, so you can see the sort of forging going right through the engine, as supposed to be very functional based... and that was really the interesting bit for me...' (CO02: Operations Manager).

It is evident that changes in business processes and structures are of great importance in order to achieve benefits from the ERP systems. The findings suggest that these changes are vital as benefits don't just emerge by having a system; in fact benefits emerge from doing things differently with the help of the system.

4.4.3. ORGANIZATIONAL INHIBITORS

Despite the importance of organizational changes, a large number of interviewees made comments about the difficulties, that they'd experienced when attempting to enact appropriate changes, in their business processes. More specifically, many interviewees hinted that one potential reason for this is the issue of 'organizational inhibitors'. These can include issues like improper training, lack of familiarity with the technology, resistance, power and politics etc. Organizational inhibitors undermine the organizational change process which ultimately leads to jeopardizing the success of whole project. One informant explained:

'...If the attitude of the organization is.... we are gonna deal it because we want to do it, because it's the right thing to do, because we can see the benefits then you tend to get a better outcome. If the organization is very resistant to change even at the senior management level and they are kind of doing this because they have been told

to then you are gonna get the opposite ... you are gonna get the result which is poor...' (V004: Quality Director).

If these inhibitors are not handled properly and from early on in the project, they can lead the project into serious disarray. One interview noted:

'...It could be something as simple as around people who have similar mentality and are social able together in accounting and likes, you know. It's the whole Chinese whisper thing again which means, you know, the system does not do this and that, we don't know why are we doing this project and then you will find somebody else, who can talk about it...' (SI02: Consultant Director).

Another interviewee commented:

'...You always get people using the politics try to knock off...it's more the case of people worrying about losing their power rather than anyone else gaining it...' (V007: Implementation Consultant).

One informant highlighted the importance of handling these issues if the organizations want to realize the smooth running and ultimately, the maximum benefits from the system development projects:

'...I have seen those situations very much so and you will always find resistance to change in any organization and you will always have the kind of people who will feel that the implementation of an ERP gives management too much visibility of how they work or takes away their autonomy, stops them maverick purchasing (for example) you know, "why do I have to go through all this work flow, just to get an approval to do that" that kind of thing...You come across it [i.e. these issues] but you have to deal

with them in the project through the change management process. You can't allow that to happen. It is something you need to be aware of...' (V001: Composite Developments Director)

The same informant also provided an example of organizational inhibitors:

'...I have seen it when did the billing in call centre implementation. Alongside of it we put in a Business Warehouse (BW) solution, so a reporting solution and there was quite a lot of resistance to that because there was a group of people in their IT organization who were Business objects fan...So they wanted to report using Business Objects. The program was based on the management desire...the management wanted to was using BW to produce reports but, slowly, overtime the usage of BW solution became restricted pretty much to the statutory reports that they have to produce... but the Business Objects use of the data grew and that was for a number of reasons but partly because of resistance...' (V001: Composite Developments Director).

Consequently, organizations need to keep a close eye on certain organizational inhibitors such as resistance, power and politics that can come into the way of change management. It is of paramount importance to address these issues early on as failure to do so will inhibit the organizations to fully exploit the functionality of newly implemented ERP system.

4.4.4. NOT ALL BENEFITS ARE PLANNED - EMERGENT BENEFITS

Some informants also highlighted that not all benefits are planned. Many interviewees commented that their organisations had realised some previously unidentified, emergent

benefits when using the system. An informant explained how her organization was able to achieve the improved cash flow on two occasions by being able to update the prices faster and by bundling of different services:

'...One of the big benefits for the [Energy Company] that we didn't actually think ... was our speed of being able to put the prices up was faster now... because couple of years ago when... we presented in [an annual ERP vendor conference]...and I was there with the one of the customer sales director and she went on stage and she said "we [Energy Company]can do now an overnight price change" and none of our competitors could do that at the time and it took them 3, 4, 5 months to enable those changes. So that wasn't something that we implemented [ERP] thinking "oh, we are gonna be able to do price changes...'" (CO01: CIO).

'...I think quite a lot of [other] opportunities came [from] being able to offer different products ... in B2B world, we would have an energy billing system and then we had other billing systems that were for the energy related services. Whereas, when it's all in [one ERP system], you can bundle and say, if the customer has got this business, then you can combine them and offer them a overall discount for example. And again, we didn't recognize that we would be able to have that opportunity...'" (CO01: CIO).

However, in order to be able to gain emergent benefits from systems, organizations should adopt continuous improvement programs. An informant highlighted the importance of continuous improvement programs:

'...If you don't immediately set off the path of continuous improvement, you have delivered your next legacy system. So, it really is important that people have that

mentality that this is a starting point. It's a bit like... the 18 years old that passes his driving license and suddenly think that they can drive a car. [Whereas], now they have to go on and get an experience of how to do it properly. It's the same with big ERP system...' (V004: Quality Director).

Thus, organizations may realize benefits that were not planned initially but after using system for a while, they could do certain things differently that would enable them realize emergent benefits. To realize these benefits, the organizations should set on the path of continuous improvement programs. Through these programs, organizations should continuously look for further exploitation of benefits. Organizations should ensure that they don't just leave the ERP system after the implementation. They should constantly evolve the use of the system, thus learning new ways of doing the business.

4.4.5. BENEFITS REALIZED THROUGH CUSTOMIZATION

It may be very desirable to have an unadulterated 'vanilla' system but in reality, it is rarely possible, due to dynamic business environment and every changing business needs. For example, an organization might want to customize its newly implemented ERP system to comply with the regulatory requirements. A complete list for customization drivers is presented in section 2.5. One informant re-iterated the point of not being able to achieve a complete standard system:

'...It's fair to say that there is no such thing as Vanilla SAP system. Vanilla is an aspiration. Vanilla is a management technique to challenge enhancement and challenge the business. Vanilla is the word that is used by the steering committee and by the executives to say that we want a vanilla system because SAP has told us and

everybody in the industry has told us that's good because it will drive down our total cost of ownership over the time. However, the guys on the ground, who are empowered and drawn into the implementation very often use the phrase "it doesn't work like that in here lad" kind of approach to the implementation team and say "No. We couldn't do it like that, we have to do it like this" and then it gets into enhancement [customization]...' (V001: Composite Developments Director).

Hence, it is very unlikely for an ERP system to remain in their original form, in a real life environment. Several informants also provided examples of benefits that were enabled through different types of customizations. One informant provided an example of how the integration of an external bolt-on enabled their organization to better manage the pricing for large tenders; a key managerial benefit:

'...we wanted to improve the way we did our pricing and SAP didn't have the module to do that... So what we did in that case was to buy another specialist pricing package and fit it in with SAP. So for managing our tenders, for very large organizations like MOD, the post office and people like that, you have to go through a quite long tendering process for energy provisions. So, we certainly have to do quite significant piece of work to do that...' (CO01: CIO).

Another informant explained how improved screen interfaces were pivotal in reducing the time spent while dealing with the customers; an operational benefit:

'...we did a quite a lot of work on usability of screens to reduce the length of time it took an agent to do the work they needed to do with the customer on the phone and

also guided the agent through the process...' (V001: Composite Developments Director).

Similarly, another informant commented that an organization was able to take sales order in less time through the modification of screen interfaces; an operational benefit:

'...[A] sales office was asked to take sales order over the phone into an SAP solution and they were very concerned because on their screens, there were fields to right hand side of screen that they needed to complete and they were struggling backward and forward to do this screen entry.... So a very unhappy sales office. A consultant who knew what he was doing, went in there and saw all this and said "well, you can change the screen and it can look like this"... Now, that sounds trivial. [But] that means twice as long to take a sales order for every person taking a sale, that's huge amount of time [being wasted]...' (V004: Quality Director).

Another key theme to emerge was the importance of 'user-exits', as these allowed organizations to achieve some flexibility in determining the pricing for its customers; a key managerial benefit:

'...[For] a specific differentiation, such as in the pricing of the energy contracts, we have ... user-exits as we call them, for customers to do their innovation & enhancements and then that is directly linked back to the system. So if it's done the right way and for a truly differentiating area, they get benefit of that overtime...[For example, for a] large industrial commercial utility customer, we don't do pricing in a very flexible[and] innovative way because the [price in the]energy market is changing all the time. So what we do is that we have a huts into those pricing tools or data sets

and when the customer makes a change ... the data that's in frost is then taken and billed. So that's one example where that differentiation is needed...' (V002: Senior Implementation Consultant).

Consequently, it is clear that due to niche industry or organization-specific requirements, organizations typically have to customize their ERP packages. These customizations, in turn, can lead to the realization of certain benefits. However, care has to be taken in doing customization such that it doesn't become an unnecessary burden at the time of upgrade (SI10: Senior Implementation Consultant).

4.5. SUMMARY OF EXPLORATORY RESEARCH FINDINGS

As explained in section 4.2, the exploratory research was carried out to clarify the concepts which were not very explicit in the ERP literature. Consequently, the results of exploratory research have provided the meaningful insights about the adoption of benefits management approaches for ERP projects.

One of the main aims of the exploratory research was to explore the extent to which organizations attempt to follow an explicit benefits management approach, when implementing and using ERP systems. The findings from exploratory phase suggest that there is generally no great aspiration, in the participating organizations, to adopt and follow these approaches. The findings suggest that the organizations don't find (academic) benefits management approaches of any practical use in the system development projects. Thus, the findings provide another example of a gap between IS research and IS practice (Petter et al., 2012). The findings also reveal the lack of interest in appraising and measuring the benefits

set at the outset of the ERP projects. Appraising the benefits from system development projects is extremely important as benefits can only be realized when measured and managed (Ashurst et al., 2008). On the contrary, our findings suggest that organizations go back to their normal ways of doing business as soon as the ERP project is finished and don't do the formal reviews of benefits over a period of time. Hence, the results from exploratory research support the claims made by existing studies (Ward et al., 2007; Ashurst et al, 2008) which state that very few organizations are actually following the approaches that are benefits oriented during and after systems development project. This also implies that package based ERP systems are no indifferent to other information systems when it comes to adopting benefits management practices. This could also be a reason for high failure rate of ERP systems (Scott, 1999; Carr, 2002; Barker et al., 2003; Kanaracus, 2010).

One of the important characteristic of the benefits management approaches is the initiation of business processes changes to complement the functionality of newly implemented system (Doherty et al., 2012). The existing studies, as discussed in the literature review chapter, highlight the importance of organizational changes that are essential to successfully realize benefits from system development projects (Marchand & Peppard, 2008; Marchand et al., 2000; Peppard and Ward, 2005; Hughes & Scott Morton, 2006; Doherty et al., 2012). These studies argue that benefits don't materialize simply through the 'insertion' of a new technology within organizational processes. In fact, benefits arise from the changes the way organization does its business. IT merely works as an enabler for these changes.

Consequently, the findings from exploratory research provide the support for existing studies. It is evident from these findings that organizations should focus on business transformation in order to achieve an improvement in their performance rather than

focusing on the 'usual' delivery of the technological artefact on time and within budget. The business transformation is also a key element in benefits management approaches. Benefits management approaches will facilitate the changes in organizational processes to complement the system functionality in order to improve the performance of business processes (Doherty et al., 2012).

Findings from exploratory research suggest that there are certain organizational inhibitors that can undermine the business changes in system development projects. These included power, politics and user resistance. It is vital that organizations don't turn a blind eye to these issues as their escalation might lead to the project failure. Whilst these issues have not been addressed and studied in the context of benefits management approaches, they have been regularly cited in the wider IS literature (Ignatiadis et al., 2009; Boersma et al., 2005; Yeow et al., 2008; Boudreau et al., 2005; Alvarez, 2008; Vasconcelos et al., 2005).

These issues have been addressed in the wider change management literature, as well. This strand of literature advocates that change projects aims to establish "new understandings, new practices and new relationships" (Thomas et al., 2011). Therefore, the change initiatives might be more readily accepted by the stakeholders if they have been involved in the negotiations for devising the new structure to be implemented. However, Thomas & Hardy (2011) note that, instead of engagement, use of power to quell user resistance often results in failed organisational change initiatives. Additionally, a number of existing change models, also, advocate the use of engagement and effective communication to get employees on board for smooth running of organisational change process (Klein, 1976).

Thus these models and the broader change management literature provide useful insights about dealing with organisational inhibitors during the wider project management. However,

this strand of literature provides limited understanding about tackling these issues in the context of benefits management for large scale IT projects. Consequently, the findings from exploratory research and evidence from existing theories suggest that these issues should be explored more fully, in the specific context of the adoption of with benefits management approaches, to get more meaningful insights.

It is desirable to set clear targets and plan benefits at the outset of IT implementation projects (Ward and Daniel, 2006: 107 and 108). To facilitate this process, organizations can use number of different frameworks to identify benefits before the start of the project (Irani and Love, 2002; Mirani and Lederer, 1998; Ross et al., 2001; Poston et al., 2001; Esteves, 2009; Davenport et al., 2002; Deloitte and Touche, 1998; Shang and Seddon, 2000) However, despite the availability of these frameworks, many informants frequently mentioned that not all benefits can be planned upfront. Organizations often identify the opportunity to realise some un-planned and emergent benefits, after using the system for a while. One informant (CO01) from an energy company described how the use of ERP system suddenly enabled them to change prices tariffs overnight rather than in months. Although, it has been mentioned in previous studies that benefits can take place during the life cycle of the system (Orlikowski, 1996); the issue of emergent benefits have not been explicitly explored in the context of benefits management approaches. Consequently, the results from exploratory research and existing studies provide the evidence to suggest that the issue of emergent benefits should be explored in conjunction with benefits management approaches.

Finally, the results from exploratory research confirm that it is highly unlikely that that any ERP implementation will remain completely untouched, due to ever changing business

needs and dynamic market environments. An informant (E001) pointed out that having a vanilla system is just an 'aspiration'. Organizations will have their own little niches which they would like to protect and hence the ERP packages get customized. Thus, our results support the existing theories that point out the need for customization (for example: Brehm et al., 2001; Holland et al., 1999; Gupta et al., 2004; Light, 2005; Rothenberger et al., 2009; Soh and Sia, 2004; Kholeif et al., 2007).

Existing studies have also discussed the benefits gained through customizations (Light (2001); Chou and Chang, 2008; Gattiker and Goodhue, 2005). Although these studies establish a link between ERP customization and benefits, there is no cogitation about different types of customizations and benefits. However, findings from exploratory research provide examples of how different types of customizations can lead to realization of different types of benefits that are deemed crucial for organizations. Additionally, in previous studies, the aspect of customization has also not been investigated in conjunction with benefits management approaches. Consequently, it is suggested, based on the evidence from exploratory research findings, to explore the benefits management approaches incorporating issue of customization and to see what effect it has on benefits realization.

The findings from exploratory research have provided the experiences of vendors, clients and system integrators about the adoption of benefits management approaches while implementing and using an ERP system. Additionally, it has also provided the evidence for the need to study few other issues such as emergent benefits, organizational resistors and customization in relation with benefits management approaches.

4.6. REVISED RESEARCH FRAMEWORK

The analysis of the data from phase one informed a number of revisions to the initial research framework presented in Section 3.4.2. The revised research framework is presented in Figure 4.1.

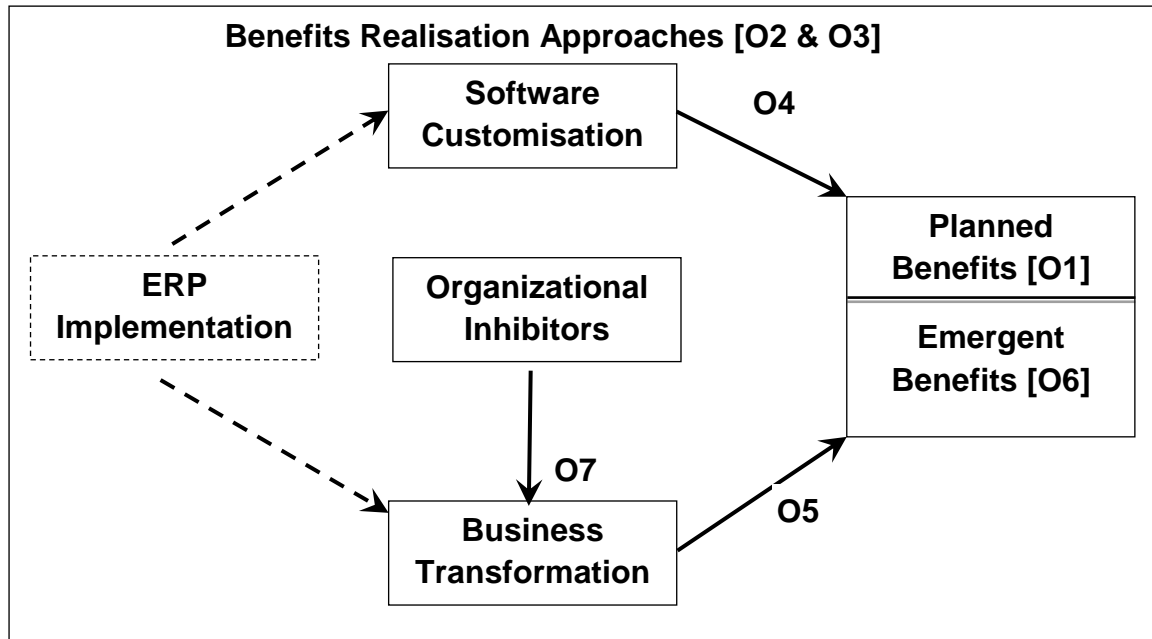


Figure 4.1: Revised Research Framework

The results of exploratory research identified two further important elements that should be considered alongside benefits management approaches in system development projects. Consequently, the following sections justify the inclusion of these elements in the final research framework.

4.6.1. EMERGENT BENEFITS

The majority of existing research has focused upon the implementation of IT systems, on-time and within budget (Nelson, 2005; Sauer and Davis, 2010; Doherty et al., 2012). This is also true with regard to ERP systems, where the majority of studies have focussed upon the implementation of the physical artefact (Schlichter and Kraemmergaard, 2010). However,

the findings from exploratory research provide the evidence that it is not, always, possible for organizations to plan all the benefits at the outset of ERP development projects. The evidence suggests that as the organizations evolve and become mature with the knowledge of the ERP systems over the time, they will find new ways of exploring and thus exploiting the system. This exploitation of system might lead to the identification of certain unplanned, emergent benefits.

It has been argued in the previous studies (Orlikowski, 1996; Lyytinen and Newman, 2008) that certain unplanned benefits can emerge during the life time of the system. Therefore, organizations should be more proactive in accommodating the emergent benefits rather than clinging only to the benefits planned in the original business cases (Doherty et al., 2012). This also reciprocates the idea of adopting the benefits management approaches. It is through the adoption of these approaches that organizations will continuously engage themselves in enhancing and improving their operations through the use of the IT system (Ashurst et al., 2008). Consequently, the findings from exploratory research suggest that the issue of emergent benefits is an important one and it should be studied in the context of benefits management from ERP systems. This has been postulated as a new objective for this study as:

- **Objective 6 [O6]:** To understand the process of leveraging emergent benefits from ERP implementations.

4.6.2. ORGANIZATIONAL INHIBITORS

The findings from exploratory research identified that issues such as power, politics and user resistance, if not addressed in an adequate manner, can turn out as obstacles, for

business changes, in system development projects. From the commencement of the project, it is of paramount importance to get the involvement of stakeholders who will be affected from the project and to communicate them the objectives that the organization aims to achieve from the project (Nah et al., 2003). Failure to do so will lead to the escalation of these issues which can jeopardize the success of whole project.

Although, these issues have been explored in numerous studies (Ignatiadis et al., 2009; Boersma et al., 2005; Yeow et al., 2008; Boudreau et al., 2005; Alvarez, 2008; Vasconcelos et al., 2005; Thomas & Hardy, 2011; Klein, 1976) but they have not been studied in the context of benefits management practices. Our findings indicate that there is a potential link between these issues and benefits management approaches which should be further explored. Thus, we have added a new objective for this study as:

- **Objective 7 [O7]:** To understand the effect of organizational inhibitors on business transformation, in the process of benefits realization.

4.7. REVISED BENEFITS DEPENDENCY NETWORK (RBDN)

As explained in section 3.4, this research is using the Cranfield Process Model as the chosen benefits management approach; and Benefits Dependency Network (BDN) is the central element of this approach. This research project intends to use the BDN as an analytical framework to carefully explore the elements of research framework and, ultimately, the research objectives. Different elements of BDN namely investment objectives, business benefits, business changes, enabling changes and enabling IS/IT have been discussed in section 2.4.3 of the literature view chapter. It is evident from the previous sections that the findings of exploratory research provided strong evidence for business changes.

As the Cranfield Process Model of benefits management (Ward et al., 1996) is being used to focus this study, the emergent benefits were incorporated into the existing BDN as shown in the figure 4.2. The column of emergent benefits have been added after the planned benefits to emphasize that the emergent benefits are 'second-tier' benefits and they may be identified and realized over a period of time. It is envisaged that investigation of emergent benefits with the BDN, in the next stage of this research, will provide us important and interesting insights about how these benefits evolve during the operational life of the ERP systems. It is important to note that in order to realize the emergent opportunities, organizations might have to modify the existing design of the system (Lyytinen and Newman, 2008). Organizations might also need, on certain occasions, to change their business processes in order to realize an emergent benefit which is facilitated by the system (Leonardi and Barely, 2010; Leonardi, 2007).

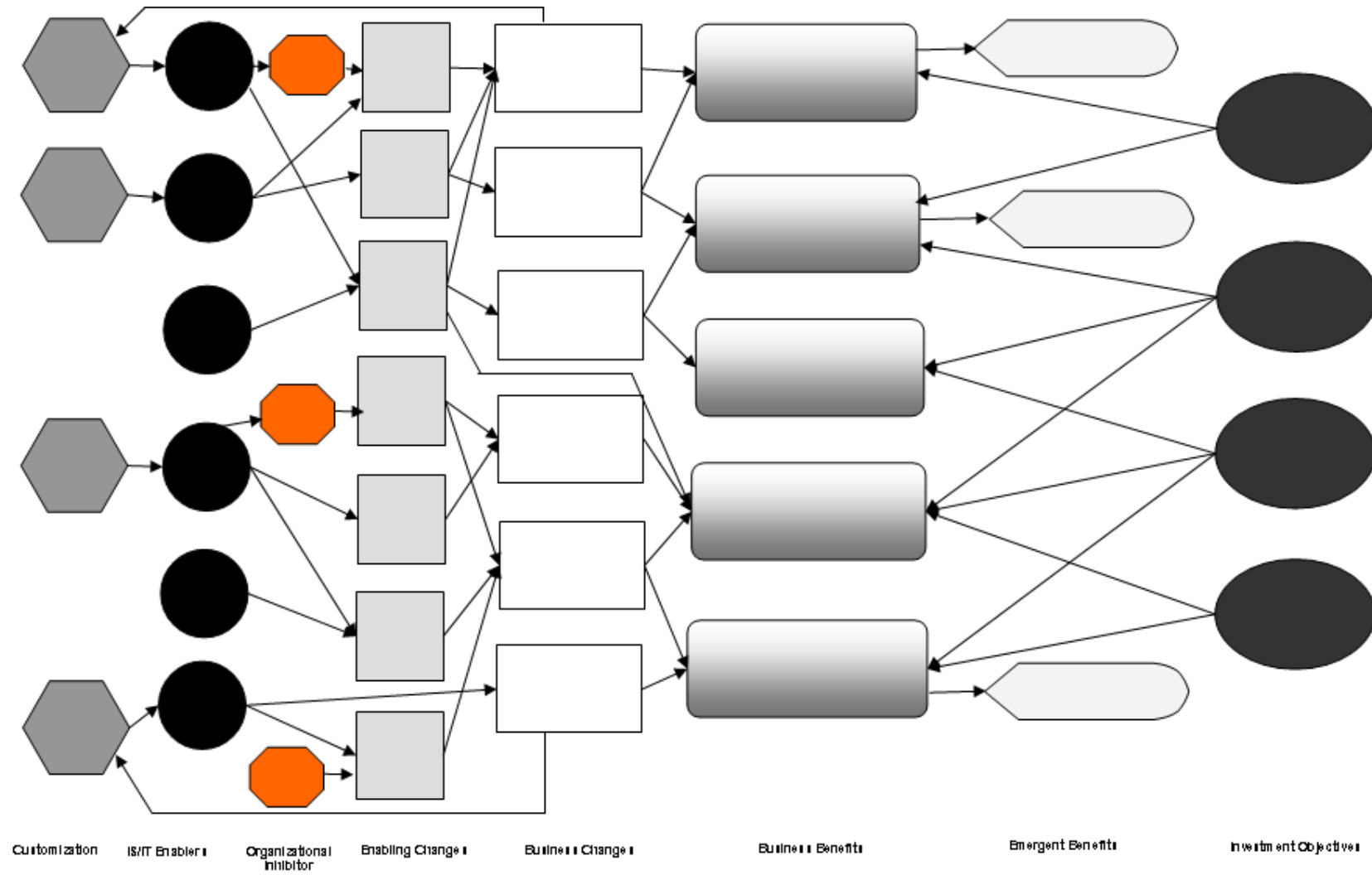
The incorporation of customization in the existing BDN is shown in the figure 4.2. It is postulated that customization can influence the BDN at two points. Firstly, customization may be necessary to modify the IS/IT enablers before the implementation of ERP system. These customizations may be necessary to ensure that the system meets the functional requirements of the organization. For example, the UK water industry has two main billing mechanisms. Some households are billed on their metered water usage. However, many households do not have a water meter and are billed on the basis of the rateable value of the home. The latter mechanism is unique to the UK water industry and is unlikely to be included in standard ERP billing functionality, but would need to be included to meet the needs of water companies. Secondly, customization may occur after the IS/IT enablers have been implemented. For example, having implemented billing functionality, the organization

might find out that the presentation layout of customer bills is not clear. Consequently, further customization may be required to adjust the format of customer bills to deliver the benefit of improved customer satisfaction. This path is illustrated in Figure 4.2 as a feedback arrow from business changes to customization. It is envisaged that exploring the ERP customization with benefits management practices, in the next stage of this research, will provide insights which will help us to understand how benefits realization is influenced by modification of ERP packages.

Additionally, organizational inhibitors have been incorporated in the existing BDN as shown in the figure 4.2. They have been placed before the enabling changes in the BDN because it is crucial for organizations to recognize these inhibitors before the commencement of enabling changes (such as training and workshops) that take place before the actual business changes in which organizations will change their business processes. It is envisaged that studying organizational inhibitors alongside benefits management approaches, rather than on their own, will provide important insights about how these issues can affect benefits management practices and ultimately the benefits realization from system development projects. It will also help us to understand the mechanisms that organizations adopt in order to minimize the effect of organizational inhibitors.

The justification of including emergent benefits, customization and organizational inhibitors in the BDN is evidenced by the above discussion. Furthermore, these issues have been identified and studied in the existing research as well. It is envisaged that the revised benefits dependency network (RBDN) will help us explore the realization of benefits from system development projects in the longer term. A discussion of how this facilitation can be operationalized is discussed in detail in the chapter five and six.

Figure 4.2: Revised Benefits Dependency Network (RBDN)



4.8. CONCLUSION

In this chapter, the findings have been discussed from the exploratory research that was conducted to explore some of the under researched areas in the existing literature. This research was conducted to explore, despite their availability, why aren't organizations following the benefits management approaches. Secondly, it was sought to explore the link between different types of customizations and their resultant benefits. In particular, this chapter has refined the research framework (Figure 4.1) and the analytical tool (Figure 4.2), based on the results from the exploratory research.

Despite the growing recognition of the benefits management approaches, the findings confirm that there is a lack of focus from organizations to adopt these approaches. This might be due to the inability of these approaches to be operationalized in real project settings. The findings also suggest the benefits can't be realized simply by implementing a new technology; the changes in business processes and structures are of great importance in order to achieve benefits from the newly implemented technology. Also, in system development projects, organizations need to be aware of organizational inhibitors that can arise before, during or after the project. It is of important to address these issues early on to fully exploit the functionality of newly implemented ERP system.

The findings also suggest that the organizations may realize unplanned benefits in the post go-live of the ERP system. These benefits can be realized only if the organizations establish the continuous improvement programs. Finally, it is clear that due to niche industry or organizational requirements, organizations have to customize their ERP packages. These customizations can also leverage the realization of different types of benefits.

Consequently, the findings led to the emergence of other issues that weren't identified in the literature review section. These included organizational inhibitors and emergent benefits and different types of benefits from different types of customization. Additionally, the findings provided strong evidence to study these issues with the existing benefits management approaches. As Cranfield Process Model has been used for this study, the BDN was modified to incorporate these issues. It is envisaged that incorporating these issues will make it more practical for the organizations to adopt the benefits management approaches. This revised BDN will be used to analyse the research objectives in the next phase of this research, which is outlined in the chapters 5, 6 and 7.

CHAPTER5: EMPIRICAL FINDINGS – ENERGYCo

5.1. INTRODUCTION

The first (exploratory) phase of this study enabled the examination of the level of adoption of benefits management practices and the role of customisation in the realisation of benefits from ERP implementations. The exploratory research also revealed the important role of inhibitors and emergent benefits that could occur during an ERP project. However, although this initial phase provided some valuable data it did not provide a detailed understanding of the relationships between the different elements of the research framework (Figure 4.1). Phase 2 aimed to build on the broad high-level insights provided from phase 1 with the aim of examining each research objective in more depth within particular organisations. It was envisaged that adopting a more detailed multiple case study approach would enable a clearer examination of the nature of the relationships proposed in the final research framework. This chapter and the following two chapters report the findings from Phase 2 regarding the benefits realization experiences of three case study organisations that had implemented an ERP system. Although, the ERP system had been implemented at the firm level in each case study, in order to fully examine the relationships between the research constructs for the purposes of this research, data was collected from two specific projects at each site.

This chapter presents the findings of the first case study. The chapter begins with the background to the case study organization and a brief summary of the two projects studied. The subsequent sections describe the main findings. The results for both projects are summarized into 8 main sections: enabling IS/IT, system customizations, organizational

inhibitors, enabling changes, business changes, planned benefits, emergent benefits and objectives. The chapter concludes with the summary of the findings.

5.2. BACKGROUND FOR ENERGYCO CASE

EnergyCo is an energy supplier. It is one of biggest energy providers in the UK. It operates a number of power stations across the UK. It also provides maintenance and servicing of boilers and heating systems. It has a large customer base. The customer base is divided into business and residential customers to which it supplies electricity and gas. In this case, we are focussing on the residential customers unit as both projects were carried out in this unit.

In early 2000, EnergyCo acquired a number of companies in the energy sector. Acquisitions of different companies led to various fragmented processes e.g. at one stage, EnergyCo had 14 different systems for billing purposes. As a result, the organization had a fragmented view of its processes and had difficulties in running its day-to-day operations e.g. there was no consistency in dealing with the customers' queries about their bills because of the dispersed billing systems; which would result in complaints from the customers. To overcome these problems, the organization embarked on a transformation program to establish integrated and efficient processes across the organization. The organization developed and set the parameters of the transformation program based on its own local context i.e. rather than following an external approach, the organization developed a plan specifically for itself. As part of transformation, the organization first changed its structures e.g. changes in staff's job roles. Once it had completed the organizational restructuring, it decided to implement the SAP solution.

The first project concerned improvements to customer service management and involved the implementation of SAP CRM in the customer services department. The second project concerns EnergyCo's decision to implement SAP's billing solution to replace its existing billing systems. These two projects were selected because, in the transformation program, the organization envisaged the majority of benefits occurring from these two projects. EnergyCo undertook a number of customizations on both solutions that enabled the realization of the key benefits. The following section presents brief summaries for both projects.

5.2.1. PROJECT1: CUSTOMER SERVICES MANAGEMENT

Before the implementation of CRM solution, the customer services department had dispersed systems in place to deal with customers. Thus, if a customer rang, he or she could speak to two or three different operators with little continuity between calls and potentially conflicting information. This lack of a coordinated response to customer queries was a significant concern for EnergyCo. Similarly, the marketing campaigns run by the customer services department were planned and executed using fragmented information resources. This led to ineffective campaign planning and evaluation because of a lack of coordination between separate systems. Consequently, to provide customer service experience and to manage marketing campaigns effectively, the CRM solution was implemented.

5.2.2. PROJECT2: BILLING MANAGEMENT

Prior to the implementation of the billing solution, the organization had multiple billing systems from several acquisitions over the previous ten years. Thus, the organization didn't

have a corporate level view of its finances. Consequently, it decided to replace the existing systems with a billing system provided by SAP called Industry Specific Unit (ISU). The SAP ISU billing system has been developed specifically to cater to the needs of the utility industry.

5.3. RESEARCH FINDINGS

This section describes the detailed findings from EnergyCo. The findings have been arranged into the main themes of BDN. Table 5.1 summarises the data sources that were analysed for this case. Figure 5.1 displays the RBDN for EnergyCo.

Table 5.1: Data sources for EnergyCo

ID	Interviewee	Duration
E001	Program Manager 1	1 hr 35 mins
E002	Program Manager 2	1 hr
E003	Finance Manager	1 hr 20 mins
E004	Change Manager	1 hr
E005	MeteringManager	45 mins
E006	Benefits Realization Manager 1	1 hr 25 mins
E007	Benefits Realization Manager 2	1 hr 10 mins

ID	Documents Observed
E008	Benefits Case
E009	Benefits Tracking Document

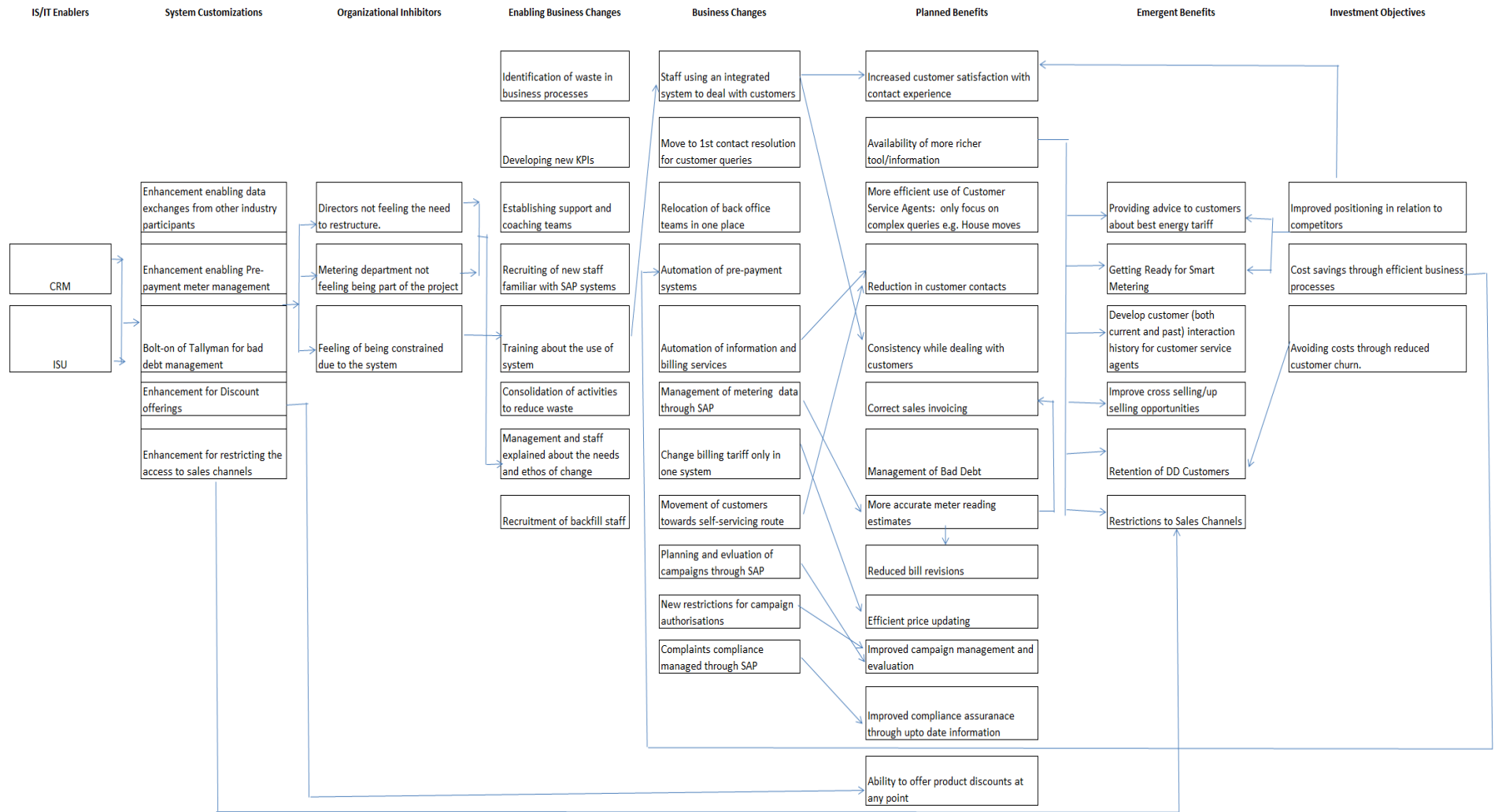


Figure 5.1: RBDN for EnergyCo

5.3.1. IS/IT ENABLERS

Several different systems were considered when choosing the new system to fit with the organization's newly created structure. After going through a rigorous selection process, EnergyCo decided to implement the solutions provided by SAP i.e. CRM and ISU. Because of SAP' leading position in the market, the organization had confidence in choosing these solutions.

5.3.2. SYSTEM CUSTOMIZATION

At the outset of system implementation, EnergyCo opted the policy of not customizing the system. The organization engaged people from SAP, in the project teams specifically, to ensure those customisations were kept to an absolute minimum. The organization took the view that customizations would make it difficult to take advantage of any upcoming new technologies. The organization thought that it would be difficult to maintain a customized system and take these customizations forward with future upgrades.

However, despite adopting this policy EnergyCo had to undertake several customizations to align the solutions with business priorities. These developments were required to fill functionality gaps missing in the standard SAP solution. Some of these requirements were specific to UK utility market and SAP didn't have them in its standard solutions. The need for developments was explained by the Program Manager:

'...Choice of SAP with its foot print of what it does is insufficient to work in our industry. So it has to be supplemented by... asking SAP to do some more work...to

make it fit with UK market as opposed to kind of world market...' (E001: Program Manager 1).

The first enhancement was done to enable data exchange with the other utility companies. In the UK energy industry, acquiring a new residential customer is a very complex process. Switching a customer from one company to another requires 30 different e-mail exchanges between different industry participants. But the original SAP footprint was insufficient to work in the utility industry. It didn't have the capability to perform these complex e-mail exchanges. So a composite development was done to enable SAP to support the data exchanges with the industry participants in the UK market.

The second enhancement was done to enable pre-payment meter management. In the UK energy market, customers with pre-paid meters get a card to purchase the electricity upfront and they can recharge the card. To manage the pre-payment, the energy companies not only need to manage the metering data but they also need to manage the cash which is coming from different outlets that provide the pre-payment services. But SAP didn't have the functionality for pre-paid metering. So again a composite development was implemented to setup pre-payment in SAP. EnergyCo engaged external consultants to develop and integrate this customization with SAP.

The third customization was done to create the flexibility to provide discounts to customers. Previously, EnergyCo could only offer discounted products either at the point of sale or at an anniversary date i.e 12 months after a customer had joined EnergyCo. However, the organization wanted to have flexibility to provide discounts whenever it wanted. So a customization was done to enable product lists to attach discounts. For example, if an agent was selling a product to a customer such as boiler maintenance, then he could propose the

straight forward product. However, if the agent observed that the customer was wavering then he could offer the discount of, for example, £50. Another customization was done after the go-live of the solution. EnergyCo had different sales channels, costing different amounts of money, for selling its products. But it wanted to segregate these channels so that the agents could only sell products via their channels. So an enhancement was done to restrict access to different sales channel. Finally, the capability of SAP to manage debt did not match the business needs of EnergyCo. To fill this gap, the organization integrated an external package Tallyman with the solution to manage bad debt.

5.3.3. ORGANIZATIONAL INHIBITORS

During the transformation project, EnergyCo faced stiff resistance from some directors. The directors did not feel the need for huge organizational restructuring. For example, the director in the customer services department only attended one steering committee meeting for the project planning and eventually left the organization as he didn't agree with the transformation program. According to Benefits Realization Manager:

'...As you go and talk to directors about the benefits from a resistance to change point of view, I have got some battle scars from numerous sessions... Because when you are dealing with directors, it's their business that you are tinkering with and it's their cost model that you are tinkering with...' (E006: Benefits Realization Manager 1).

The issue of user resistance was further evident in the metering department. There was feeling amongst the employees that they were not involved in the project from the beginning. They felt that the benefits stated in the business case were finalized without their engagement. The Metering Manager highlighted this issue:

'...I think the first thing in the context of that is, metering is in many ways on the periphery of this program. Whist I would always argue that metering and the metering data is at the heart of a utility, I am often alone voice in that. The concept of metering, people think it's about meters. Well, that's not it. I don't have any issues with the meter. I am actually interested in the metering data and how it runs through the system...' (E005: Metering Manager).

Running and managing the campaigns through SAP was a big cultural shift for EnergyCo. The staff saw the system as a burden and felt that they were constrained because of the system.

According to the change manager:

'...a lot of the questions were about what if we don't use the system. And to me that was a sort of an indication of immaturity of looking at the customer as a whole...the system was seen as slowing it up. It's been referred to things like 'do I need to do more typing with my job?' and I was of the view that if it would have been a finance system, you wouldn't see it as a typing exercise to make an end to end purchase order...It's interesting...when we speak with the employees and ask them to see the customer in the bigger picture and realize where we are trying to get to. It's not about, you know, it's stopping me doing what I need to do. Actually, we need to serve the customer well and that's the end game. So there were some really interesting behaviours...' (E004: Change Manager).

Consequently, EnergyCo faced some organizational inhibitors in the form of resistance from senior managers, negativity about the transformation project and negative perceptions about the SAP system. The organization took specific measures to resolve these issues, which are discussed in the next section.

5.3.4. ENABLING CHANGES

EnergyCo conducted various one-off changes to tackle the organizational inhibitors and to enact the business changes. These include briefings about the project, training and coaching sessions, identification of waste in the business processes, recruitment of back fill staff and establishing the support teams.

In order to reduce the resistance, the relevant stakeholders were explained about the ethos of the transformation project. They were brought together at one place and explained the purpose of the project and its outcome. According to the Finance Manager:

'...We have the ethos...we put quite a lot of effort into what this meant...we did poster sessions. So there were things about the one team and what that meant and what that didn't mean.... And as you can imagine, like all business changes, it's bit of carrot and stick, it's about speaking with team leaders and middle managers and with the senior managers and saying to them, you know, I know you are looking for horizons of the transformation program for the customers but ultimately, our base line is still not quite secure. [So] We needed to make sure that they [i.e. the managers] lead that as well.....' (E003: Finance Manager).

To get the metering department on board for the project, briefings were given by the benefits realization manager to the metering department. In these briefings, the need and the purpose of the transformation project was explained to the metering department staff. Subsequent discussions were held to finalize targets for the metering department. The Metering Manager states her observation after those discussions:

'...So I said to them [the metering department] that there is so much to do that isn't capital related but that's to do with better education, better training, better explanation and people talking to each other. You get into upward spiral in that kind of thing. When people begin to build confidence...if you talk to them, train them better and spend more time with them, then they become better...' (E005: Metering Manager).

To facilitate training and coaching sessions, the EnergyCo established business teams that took staff through the proposed processes. This was done to make them understand the purpose of the project and realize how the changes conducted interlink and result in more controllable, richer and faster processes. The staff was also explained the risks to the brand reputation of EnergyCo if they continued working in the old fragmented ways. The change manager explains:

'...I said to them you don't have to use it, that's fine. [But] if you don't use it, our service teams won't know the campaign that you have launched. So when a customer rings in, you are disabling our service team. You are inhibiting them working effectively and creating relationship with those customers. And that's where it does begin to hit the benefits as the overall experience is poor. It's frustrating for the customers...' (E004: Change Manager).

The organization also recruited people with experience of using SAP. Before transformation, the organization decided to identify wasted resources in different business processes. During this exercise, business waste was located in several processes. A debate was then held amongst stakeholders about how much the identified waste could be reduced through the transformation project and the financial effect of these reductions. After the

identification of waste in business processes, several activities were consolidated to reduce the business waste. For example, instead of speaking with three different agents for a new customer setup, activities were consolidated so that only one person would be needed to setup a new customer account. Consequently, the waste identification workshops also enabled EnergyCo to develop new KPIs. These KPIs were then applied to the departments to achieve through the transformation project. According to Program Manager:

'...We have got profit units, performance units. [Therefore] the KPIs are relevant to those managing directors. [So] if you are at the chief operating office, then you can see the pull and push of who is achieving... KPIs were represented in each of these workshops, together with the business experts to see of the way we do it now and how it can be improved. And the outcome of those became 'Here is what we want to do' which then became the scope...' (E001: Program Manager 1).

The organization also trained its staff about the use of SAP solutions. Because of the scale of transformation project, the organization had to recruit back fill staff to cover while the permanent staff were being trained. Additionally, the organization also setup extra support and maintenance teams for the smooth transition and for the go-live of the project. These teams were utilized, as and when required, to ensure that the project milestones were delivered on-time and with required-targets.

5.3.5. BUSINESS CHANGES

One of the main changes was the push from the organization to move customers towards a self-servicing route. This resulted in automation of customer information and billing services.

According to Program Manager:

'...Processed work, it's automated [now]...when you make an answer call, it can be answered by an automated approach, you can put in you meter reading, you can tell what your bill is, you can pay there and then...' (E001: Program Manager1).

The organization also moved towards first contact resolution for the customer queries.

Although, this change increased the time required to resolve a query, the customer only dealt with one agent instead of being passed via two or three different agents. This change was further explained by Benefits Realization Manager. He states that:

'...If a customer phones up, sorted there and then. So if the advisor has the capability to finish an end to end process that they have been assigned, then that contact is done. It might take a bit longer but it means you don't have to manage the second call which is far more costly...' (E007: Benefits Realization Manager 2).

In order to achieve consistency while dealing with customers, staff now interacted with customers using integrated SAP screen prompts. Previous to SAP, the legacy systems enabled staff to have autonomy in terms of managing and dealing with the customers' queries. However, SAP was very prescriptive and it took the staff through different steps to resolve customer queries. Ultimately, this enabled the organization to have consistency in its interactions with the customers.

Previous to the transformation program, back office teams were located in different geographical locations. This meant that if an agent couldn't completely resolve the customer query then he transferred the customer to a different person in another location. Consequently, to achieve the objective of 1st contact resolution, back office teams were relocated to one place. Because of restructuring, they all now sat and performed end to end

processes from one location. Having back office teams at one place meant that if a query cannot be resolved by an agent, then rather than passing the customer to a different person, the agent can himself speak with a related (available) person and can then respond back to the customer.

Before the transformation program, the staff of EnergyCo used spread sheets and emails to exchange the information to put together a marketing campaign. However, as a result of transformation, the central database was used to get information about different aspects of the marketing campaign and then putting them together. This meant that staff were no longer using Excel and Outlook and that the campaign was now organized and managed through SAP system. Also, in the past, staff used to run different marketing campaigns on their own and there was very little control in terms of campaign management. Although, these campaigns were signed off but there was no discussion regarding whether the EnergyCo actually needed to implement these advertising campaigns. This meant that, sometimes, campaigns were run involving only a few customers. However, after the transformation, authorization of marketing campaigns was restricted. New controls meant that only those campaigns were authorized which were considered important for organization. Additionally, the staff couldn't choose the target group of customers to run a campaign; it was determined by the system. The change manager highlights:

'...It's fairly basic stuff but it was new to the marketing department...this is against the past where some people would say 'oh just use my password'; and this is really a poor control. It is like I will be really appalled if my bank's marketing department started looking at my personal account. They don't need to do that. And its the same here. You need access to do your job but you don't have to look and tinker

with...there was a culture of where you would just check couple of accounts to make sure everything was a 'right. Not any more, you have to trust the system. When it builds a target group of x customers, you have to trust it that it's pulling the right data out. And that's a big cultural shift...' (E004: Change Manager).

Also, previously the quality of a campaign relied completely on knowledge of a campaign manager. Campaign managers gathered all the information, put it together and took it through till the end. As this approach relied completely on the personal knowledge of the campaign manager, mistakes used to lower the quality of the campaign. This also meant that sometimes legal and compliance issues were over looked. However, with the transformation, as the campaigns were now organized and managed using SAP, all the checks were now done through the system rather than relying on a human knowledge. The idea was that the staff didn't need to manage the checks of a campaign manually because of the control mechanism embedded in the system to handle the campaigns.

EnergyCo is a regulated organization. Therefore, it takes great responsibility about the compliance obligations in the energy market. One of the main compliance areas concerns sales complaints. The organization has established a team that investigates complaints against sales agents and analyses them to ensure sales compliance obligations are followed. This team looks at the sales agent history, customer history, regulatory requirements and then analyses all the information to resolve the complaint. Before the transformation program, the compliance team worked off-line and in an ad-hoc manner. The team accessed the various legacy systems and made the decisions about the complaints based on fragmented information. However, as a result of transformation, rather than pulling the data from different sources, the team now used the SAP system for issues of compliance in

terms of complaints. This meant that it had up to date information about the complaints and they could resolve issues quickly.

As part of transformation, the billing department also automated the Pre-payment processes. The automation enabled the organization to remove the manual tasks for prepayment meter management and cash handling. Another new way of working was changing the billing tariff in just one integrated system rather than 14 different systems in the legacy world. The Finance Manager explains that:

'...So, we are talking about the integrated platform. So when we do a price increase, for instance, we change it at one place. And also if we were doing any other sort of change, the fact that its integrated rather than to actually touch lot of different systems is basically IT change benefits...' (E003: Finance Manager).

Before the implementation of solution, the organization used to manage data exchanges with the other energy suppliers, using the dispersed billing systems which were knitted together through different interfaces. The use of dispersed billing systems, for data exchanges, resulted in poor visibility for the EnergyCo. To address this, the organization did a composite development and subsequently used this development alongside the billing solution to manage the data exchanges with the other energy suppliers. Similarly, before the implementation, organization used to manage the metering data manually for exceptions management. Whereas, with the implementation, the organization now managed the metering data and all the related exceptions through the solution. According to the Benefits Realization Manager:

'... If you look at the legacy world, many of the exceptions which come via consumption are actually managed by people using Microsoft excel, access and different reports. So if you get a dodgy meter read coming in, then in the legacy world a man would download a report, then he will look at the reasons why it has come up and actually broke it up into groups. If you look at the organization required for that, you need lots of people to manage the data before it gets to the person who can fix it. One advantage SAP gives us, it's route the exception through to the individuals ...' (E006: Benefits Realization Manager 1).

The informants highlighted the main changes carried out as part of business transformation project. With the implementation of SAP solutions, the organization moved towards first contact resolution and self-servicing route for customers. This meant automation of some activities such as pre-payment and billing services. With the help of solution, the organization had to change the billing tariff in just one system instead of 14 different systems. Also, staff now dealt with customers through SAP screens, which provide consistency in dealing with the customers. These business changes generated a number of benefits, which are discussed in the next section.

5.3.6. PLANNED BENEFITS

One of the biggest advantages of SAP-CRM was the improved customer satisfaction with the contact experience. Because of an integrated system, only one person could resolve the customer queries now. This, ultimately, led to reduction in customer complaints. Also, trying to sort an account at one place, with an integrated system, brought the consistency while

dealing with the customers. This was further elaborated by the Program Manager who states that:

'...there was also a big benefit of consistency because fixing things on three place, there is a chance that two people will get it bang on and then the third one will do slightly differently...So we think you irritate people if you go through 10 ways of identifying who it is on the phone ... Now that's the [improved] customer experience as well as a more efficient and effective way of dealing with them...' (E002: Program Manager 2).

The push from the organization towards a self-servicing route led to the reduction in customer contacts. So if a customer rang to pay a bill, because of an automated service, he/she informed the system about the meter reading and paid the bill. This process was further explained by the Finance Manager:

'...So [with self-servicing] you don't have the hands off. So every time, an individual has to take a piece of paper and put it down, that's an activity...So we realized that we will have less calls coming in, average handling time will probably increase because it's a first contact resolution... so the majority of our customers are DD type customers. They can look after themselves and we never contact them now...' (E003: Finance Manager).

Reduction in customer contacts meant that the time of customer services agents was more effectively utilized. For example, they focused now on handling complex queries such as house moves. EnergyCo wanted to have the flexibility to provide product discounts.

Previous to the CRM solution, it could only offer discounted products either at the point of

sale or at an anniversary date. However, the CRM solution enabled the agents to provide the product discounts wherever they felt necessary. Another important benefit of the solution was the effective planning and management of the marketing campaigns. Previous to SAP, the marketing campaigns were organised through various fragmented Excel and Outlook systems. However, after the transformation, they were managed through SAP's centralized database; which increased the quality of marketing campaigns. The organization was able to do improved targeting and segmentation of its customers. It now had more knowledge about customers' portfolios, energy service propositions and demographic information. This helped marketing department to develop, implement and evaluate the marketing campaigns in a structured way. The Program Manager explains that:

'...From our sales and marketing colleagues, there are lots of sales initiatives but I don't think we always know how accurate something really worked. So with the campaign management function within SAP, you are able to build up what did you target, how successful was it. That gives you that insight that how successful was it, is it worth trying again...' (E001: Program Manager 1).

Also, the complaints compliance team started using the solution to get more up to date and integrated information; rather than pulling the data from separate legacy systems. This enabled the EnergyCo to resolve the complaints and deal with the agents' performance swiftly. Also, the organization now had the tool to get the right information at the right time from the compliance perspective.

Having an advanced solution also provided organization with a tool that was very rich not only in terms of providing real time information but also in terms of the functionality. For example, managing the data exchanges through ISU provided the visibility to answer

customer queries. Previous to the solution, if a customer called the organization enquiring about the status of his change for supplier request, the agent was only able to confirm the receipt of the application but didn't know the status of the application. Whereas, with the solution, the agent was not only able to confirm the receipt of the application but also its status as well e.g. he/she could inform the customer that the EnergyCo had communicated with the other supplier and were waiting to get a response back in two days. Similarly, the Benefits Realization Manager further elaborated the benefit of managing the metering data:

'... When you get meter read in, you can then translate it into consumption and you can translate into a bill. Those meter reads have to have a level of accuracy and it have to go through a level of checks to actually make sure that they are valid. So we have a whole back office team just managing the meter. Because meters get obsolete, they get broke, they get changed etc. If the meter doesn't synchronize with the actual meter read that is coming in, then you start getting errors into your bill...[and SAP provides the ability to manage all those things through real time and accurate information]... So if we have implausible reading, it will actually route your through the advisor who can fix it. So automatically you have got the efficiency...'

(E006: Benefits Realization Manager 1).

Thus, the use of ISU had provided EnergyCo with more accurate meter reading estimates.

This also helped EnergyCo to produce correct and accurate sales invoices. The Finance Manager stated that:

'...So the good example is, our previous billing systems didn't take into account of things like what we believe people's average consumptions were...so if you have a very cold December or very cold January, then actually our billing system won't know

that because we had not told it that it's cold. However, the new solution actually takes data flows from the settlements, so we know that actually we were supposed to consume that many kilo watt hours but we actually used this many and therefore, it actually puts that into the estimating routine. So in that example, the customer gets an actual correct bill...' (E003: Finance Manager).

Because of the more accurate meter reading estimates, the organization required fewer revised bills. For example, the customers couldn't have 'negative' electricity. If it occurred then the meter reading was corrected before it was sent as an invoice. So if the meter reading wasn't correct, it was investigated and resolved instead of creating an exception down the line after the bills had been produced and sent to the customers. Sometimes it involved speaking with the customers upfront but it meant that the billing department wasn't issuing a bill, which then had to be cancelled or rebilled. These internal efficiencies eventually led to the reduction in headcount as less queries resulted in less disputes.

According to Benefits Realization Manager:

'...There is a whole layer in relation to operations planning. So it's how many people do I need. There is a planning team that determines how many advisers that are required. There is also support function in relation to team managers. If you have got X000 advisers, you need x amount of team managers. If that X reduces, the support X also reduces...' (E006: Benefits Realization Manager 1).

Another benefit of ISU was the ability to update the prices more efficiently. Instead of 14 different systems, the organization now had to change the pricing in just one billing system. Also, automation of prepayment led to the reduction in manual activities for managing the processes of prepayment. Further to these efficiencies, the EnergyCo was now able to

maintain its cash flow by managing the bad debt through the use of Tallyman. Previously, the organization had to write off some bad debts if it took too long to collect them. With the help of Tallyman, the organization could identify people getting into bad debt and could take immediate action to reduce the number of bad debt customers.

Consequently, the use of CRM and ISU solutions enabled a number of benefits. For example, the management of metering data through SAP resulted in these included more accurate meter readings, reduction in implausible billing and reductions in head count. Also, the use of SAP to handle customer queries improved the customer contact experience. The billing department was also able to update the price tariffs on just one system with the help of the billing solution.

5.3.7. EMERGENT BENEFITS

Through the use of the SAP solutions, the organization was also able to realize some emergent benefits. For example, the CRM solution provided a platform where it had improved opportunities for cross selling e.g. due to more information it has about its customers, EnergyCo could now sell boiler maintenance services to customers with boilers. Previous to the solution, the organization didn't have the capability to record the history of its customers. By using the solution, the organization could now build up the history of the customers over time. So if a customer left and then came back again, with the help of his previous history, the organization could locate the amount owed by the customer. Having the history of customers also helped organization to retain its Direct Debit customers. The Finance Manager explained that:

'...I can actually see how many direct debit customers we want and therefore if the customer is in the process of leaving us, we may choose to ring up the customer and say 'who have you gone with and I can give you a better deal'. The fact of the matter is I have lost receipt of bill customer, I don't care, you know, you can go... we want DD customers not bill of receipt customers. That is an aspiration in the utilities because DD customers are cheaper to serve...' (E003: Finance Manager).

Because of the visibility of the information, the organization now had the ability to advise customers about the best energy tariff. The visibility enables the staff to analyse a group of customers, understanding their needs and then offering them, from their perspective, the best energy tariff. The Finance Manager states that:

'...For a lot of the population, utility bills now are second biggest bills after the mortgage. So a lot of people are actually phoning up for that general advice on how can we actually reduce their bill. They want consumption advice in terms of how can they reduce that...' (E003: Finance Manager).

In the post go-live of the solution, the organization realized that it could restrict access to different sales channels. This was done so that the agents from a particular sales channel can only sell the products, which are categorized in their channel. The change manager explains:

'... in the [transformation] program, you could have kind of single list of campaigns for every channel, so everyone can sell them. The assumption was when you train your staff that you are not allowed to sell the cheapest product, then you shouldn't. But what actually happens is 'I will sell the cheapest products and somebody down

the line will deal with the exceptions'. So it's very difficult to train that behaviour to people when it is still in front of them. So we decided that even if we have given them the training, we need to constrain the system. We need to make sure that the campaign is only visible through the right channel at the right time. So, we have done some changes in the system to make sure that an agent can only sell through a channel assigned to him...' (E004: Change Manager).

From strategic perspective, the ability to manage smart metering is very important for UK utilities these days. UK government has planned to replace all existing energy meters with smart meters by 2020. SAP solution provides EnergyCo a platform, which ensures that when smart metering comes more common, then it had the capability to adopt itself to the market requirement.

Consequently, the EnergyCo got a number of long-term benefits enabled by the SAP solutions. It now had the capabilities of cross-up selling and retaining the history of its customers. It also now targeted its marketing campaigns in an efficient way. Additionally, the billing solution will provided a platform to introduce smart metering in the future.

5.3.8. OBJECTIVES

One of the major objectives of implementing SAP solutions was to improve the positioning of the organization in relation with its competitors and their products. All the other major energy companies had either implemented or were planning to implement ERP systems. The organization felt that it would be left behind and wouldn't have the latest capabilities of competing in the market, if it didn't change its systems. Consequently, at that time, the

organization considered different systems and it was decided to implement SAP as it was the market leader in providing CRM and billing solutions.

Another objective of having the solution was to reduce costs through efficient business processes. For EnergyCo, process efficiencies meant maintaining its services with fewer people. To achieve that, during the transformation project, the organization identified and eliminated the waste in the business process. The Finance Manager further elaborates that:

'...we actually looked at those benefits through what we call train track. We actually looked at the individual processes... through transformation foot print and basically said 'which of these processes will transformation impact'... So we can say 'in this process, when you drill it down, this much is in relation to exception'. We believe transformation will reduce our exception say by 20%' and then it was basically being able to financially asses what that impact that is...' (E003: Finance Manager).

Another objective of having the CRM solution was to avoid the huge costs through reduced customer churn. The organization previously churned about a million customers every year, which caused high costs for EnergyCo. By having an advanced solution, it now had the ability of capturing and managing rich customer information, which was used to retain its customers. Consequently, the customers churn and the related costs were cut down.

5.4. SUMMARY OF FINDINGS

In this chapter, we have presented the findings of two separate projects from EnergyCo. The revised BDN (from phase1) has been applied as an analytical tool to arrange and analyse

these findings. Using this tool provided an interpretive approach to understand the process of benefits realization from ERP system projects.

As highlighted in chapter 2, the adoption of benefits management approaches may be a useful addition to systems development projects. It has been argued that, by adopting these approaches, organizations can improve the likelihood of realizing benefits from their IT investments. EnergyCo chose to develop its own approach to facilitate the process of benefits realization, which enabled EnergyCo to tailor the approach to their own organizational context. This meant that the organization had more flexibility and freedom in managing the process of benefits realization. As part of this approach, EnergyCo managed the implementation of CRM and ISU systems concurrently. The organization recognised that by building synergies between the two projects, it would have a greater chance of realizing benefits. Also, managing the two projects through a portfolio approach meant that the EnergyCo had the holistic view of the benefits that would have arisen due to the interactions between CRM and ISU solutions.

To achieve benefits from ERP systems, it has been suggested that organizations need to transform their structures as benefits don't simply emerge from the implementation of new technologies. As part of the transformation program, EnergyCo embarked on transforming its organizational structure and the work processes. The organization first changed the structures of its processes and then technology was brought in to support the organizational process changes. The underlying aim of the structural changes was to achieve process efficiencies. Some of these changes resulted in a complete new way of working. For example, previously, the staff of EnergyCo used spreadsheets and emails to exchange information to put together a marketing campaign. But as part of transformation, the central database was

used to get information about different aspects of the marketing campaign and then put it together. Similarly, staff didn't choose the target group of customers to run a marketing campaign; it was now determined by the system. Also, the organization took initiatives to move its customers towards self-servicing route, which led to the automation of some of its services. The organization also located the back office teams from different locations to one place. This meant that the most customer queries were resolved at the first contact now. Another big change for billing department was to manage the metering data and the exceptions through SAP. Although, both the billing and customer services department went through restructuring, the changes made at the billing department were trivial compared to the changes in the customer services department. It is not to say that the billing department didn't plan for any changes or benefits. Indeed, it is just to highlight that, in comparison, it was the staff of customer services department who saw a significant change in their ways of working. But ultimately both customer services and billing reaped a number of benefits such as improved customer satisfaction, reduction in customer contacts, correct sales invoicing and reduced bill revisions. Consequently, these findings reaffirm that in order to realize the maximum potential of the new technologies, it is very important to take the system development projects as business transformation projects rather than the IT development projects.

As highlighted in the research findings, the EnergyCo did several customizations for CRM solution and three for ISU solution. Some of these customizations were done to fix the missing functionality in the SAP solutions; e.g. the billing department did two composite developments to enable data exchanges with the industry and pre-payment meter management. Other customizations were done to achieve a benefit e.g. billing department

integrated Tallyman to enhance its ability of managing the bad debt. These results corroborate the findings from phase 1 which confirmed that it is impossible to have a completely un-customized system due to different organizational requirements. It is also evident from the findings that the EnergyCo did three different types of customizations; Composite Developments, User-Exits and Bolt-on. Composite developments were done for data exchanges with industry and pre-payment meter management. Customizations done through user-exits included developments for sales discounts and restriction of access to sales channels. Similarly, a Bolt-on package, Tallyman, was integrated with ISU. Different types of customizations generated different kinds of benefits. The first enhancement done through user-exits empowered the organization to have flexibility for providing discounts at different points in time; a key organizational benefit. For example, the agents were able to offer discounts at point of sale or at the anniversary. The second enhancement done through user-exits enabled the management of EnergyCo to restrict access to different sales channel; a managerial benefit. It enabled the management to ensure that the agents from a particular channel only sold the products sanctioned in their channel. Similarly, the addition of Tallyman (as bolt-on) enabled the billing department to have an improved debt recovery; a managerial benefit.

EnergyCo realized at the outset that it was very important to involve senior management and the end users in the transformation project. This was deemed necessary for the smooth running of the project and to ensure that the resultant changes meet their requirements and enhance their ways of working. Senior management participation was also necessary to ensure that they took the responsibility for the changes carried out in their perspective areas. However, the EnergyCo came across the organizational inhibitors once it started the

project. It faced stiff resistance from some directors who thought that there was no need for restructuring at such huge scale. Similarly, there was a perception amongst the metering department that they were not consulted in finalizing the changes and the benefits of the transformation project. Also, staff in the customer services department viewed the system as a burden as it constrained them from their previous ways of working. To tackle these problems, the EnergyCo ran the briefing sessions to explain the purpose and ethos of the project. It also held the coaching sessions to explain the related stake holders about the efficiencies that would be enabled through the transformation project. These steps, ultimately, resulted in the smooth running of the transformation project and the implementation of the both solution. Consequently, it is evident that shared responsibility and user involvement can be considered as key approaches to resolve the organizational inhibitors. This would, potentially, result in the maximum 'buy-in' of the project and to get successful results from the project.

In traditional system development projects, the focus on benefits vanishes after the completion of the project (see section 2.4). However, EnergyCo initiated on-going benefits realization activities as part of the transformational program. As part of benefits realization activities, the organization adopted an exploitation strategy, which helped them to realize a number of emergent benefits through regular reviews after the go-live of the solutions. For example, the customer services department, after using the system, realized that they now had the ability for cross and up selling to customers e.g. boiler maintenance. Similarly, EnergyCo now had the ability to build a history of its customers, which could be utilized to retain its Direct Debit customers as these customers were traditionally cheaper to serve. Also, the SAP solution provided a platform, which could be utilized to manage the roll out of

smart metering in the near future. This is particularly important as UK government plans to replace all existing meters with smart meters by 2020. Consequently, it is possible that organisations might realize some unexpected benefits during the lifecycle of the system which have not been thought off previously. The organizations should plan the benefits at the outset of a system development projects.

Because of the transformation program, the EnergyCo kept its focus on benefits. There was an understanding amongst the senior management that the benefits wouldn't be realized merely through the on-time and on-budget delivery of the technological solutions.

Therefore, all the necessary activities of the project were explicitly defined and actively managed to realize the benefits. During the analysis of the data, several patterns emerged establishing the links between different activities of the project. The following sections describe three illustrations of these activities in terms of different elements of BDN; which were instrumental in realizing the benefits.

As highlighted by informants, consolidation of different activities to reduce waste (Enabling Change) led to a number of benefits. For example, the organization was able to achieve increased customer satisfaction (Planned Benefit) after changing to the first contact resolution (Business Change). Improved customer satisfaction will ultimately help organization to improve its positioning in relation to its competitors (Investment Objective). Consolidation also led to the automation of pre-payment, information and billing systems (Business Changes). However, to enable the automation of prepayment systems (IS/IT Enablers), the organization had to build an enhancement in the SAP solution (Enabling IS/IT Change). These changes were pivotal to reduce the customer contacts (Planned Benefit). Additionally, consolidation enabled the organization to change the billing tariff on only one

system (Business Change), which resulted in more efficient price updating (Planned Benefit). These benefits have resulted due to efficient business processes, which will lead to enormous cost savings (Investment Objectives).

Through training (Enabling Change), the staff started using an integrated system (IS/IT Enablers) to deal with the customers (Business Change). Because of the prescriptive nature of SAP, it provided organization the consistency while dealing with the customers (Planned Benefit). It also meant that the organization now had an advanced tool with richer information (Planned Benefit). By using an integrated system, organization could ensure the utilisation of customer services agents for more core activities such as house move (Planned Benefit). Having an advanced tool and richer information will also enable the organization to realize some emergent benefits. For example, organization was now able to build the history for its customers (Emergent Benefit). Through building the customers' history, organization could focus on the retention of DD customers (Emergent Benefit). This helped organization to reduce the costs of customer churns (Investment Objective). Through the use of SAP, the organization also engaged now in cross-up selling opportunities e.g. boiler maintenance (Emergent Benefit). The solution could be used to provide advice for best energy tariffs as well (Emergent Benefit). Additionally, SAP provides a platform, which could be utilised to deploy smart metering in the near future (Emergent Benefit).

With the implementation of SAP (IS/IT Enablers), the metering department felt they were not involved and hence did not feel being part of the project (Organizational Inhibitor). To resolve this issue, the organization not only trained its employees about the usage of the system but they were also explained the ethos and purposes of the transformation project (Enabling Change). Consequently, the metering department started using the SAP to

manage the metering and industry data (Business Change). This resulted in reduced revisions for bills, correct sales invoicing and reduction in FTEs. However, organization had to develop an enhancement to enable the data exchange with the industry (Enabling IS/IT Change). Consequently, it is evident that EnergyCo planned most of the activities for the project and then managed them proactively to realize the anticipated benefits.

CHAPTER 6: EMPIRICAL FINDINGS – WATERCO

6.1. INTRODUCTION

This chapter presents the findings of the second case study as part of phase 2 of the empirical work. The chapter begins with the description of the case study organization and a brief summary of the projects studied. The subsequent section describes the main findings. The results for both projects are summarized into 8 main sections: system customizations, enabling IS/IT, organizational inhibitors, enabling changes, business changes, planned benefits, emergent benefits and objectives. The chapter concludes with a summary of the research findings.

6.2. BACKGROUND FOR WATERCO CASE

WaterCo is a privatised water company. It operates in nine different regions in England. It has a large customer base, which is divided into domestic, commercial and industrial groups. Geographically, it is the largest water company in England and Wales. Like other private water companies in England and Wales, it is economically regulated by the Water Services Regulation Authority (OfWat). OfWat determines the prices that water companies can charge to their customers for water and sewage services. It does so by considering the water companies' proposed capital investment scheme and the expected efficiency benefits from the proposed scheme. The resulting investment program is known as the Asset Management Plan (AMP). The water companies submit their proposals to OfWat every five years, which then determines the AMP for the next five years.

As was the case in the previous chapter, two projects were chosen for in-depth study. The first project concerned centralizing the operations of WaterCo. As a result, a new Operations Management Centre (OMC) was created which consolidated operations. To support field engineers' work in the newly created OMC, WaterCo decided to implement SAP's mobile solution. In the second project, WaterCo decided to implement SAP's billing solution because its existing billing systems had become extremely costly to maintain. WaterCo did a number of customizations on both solutions that enabled the realization of the key benefits. The following section presents brief summaries for both projects.

6.2.1. PROJECT1: OPERATIONS MANAGEMENT

Prior to the implementation of the mobile solution, the field engineers in the operations department of WaterCo would pick up jobs from their regional depots. The depot managers would assign these jobs to them. After the completion of the jobs, the field engineers would have to return the paper-work related to each job, but there were certain discrepancies with this approach. The paper-work returned by the engineers was often lost or it misinterpreted the actual work undertaken e.g. sometimes, it could be difficult to understand, from the paperwork returned by the field engineers, whether a planned work has been completed. Additionally, before the introduction of mobile solution, different regions would schedule their work using their own independent systems. There was no synchronization across different regions which resulted in poor visibility of resources required for planned or emergent jobs e.g. due to lack of synchronization, the organization would not be able to send a field engineer from one region to cover a flood job in another region; even though the engineer might be working in the same area at the time. Because

of the lack of coordination between different processes, the organization didn't have a corporate view of its operations. Consequently, there was a lack of information about the status of different jobs. As a result, the management team of the operations department did a strategic review of its processes and decided to centralize them. The key component of this change was the creation of the OMC, which would be responsible for the centralization of operations. It was envisaged that establishing the OMC would lead to centralized planning, scheduling and reporting. Consequently, it needed a system to support the new structure. The management of WaterCo decided to implement SAP's Mobile Asset Unit (MAU) solution as they perceived SAP to be the market leader in providing mobile solutions. The mobile solution was instrumental to enable the new way of working as it provided WaterCo with a platform to centralize and to be more efficient in its operations.

6.2.2. PROJECT2: BILLING MANAGEMENT

Prior to the introduction the billing solution, WaterCo had a billing system, which was completely bespoke, and which was written specifically for its billing department. It was built on a Honeywell mainframe platform. Because it was an ageing system, WaterCo was finding difficult to maintain this system. Also, it was finding difficult to find employees with the appropriate skills to work and update the system. Water companies in the UK are generally risk averse and this was certainly true for WaterCo. The management decided that it couldn't take the risk with regards to its IT systems. So at that time, it looked for different billing solutions in the market and decided to go with the SAP Industry Specific Unit (ISU) solution as SAP was the market leader in providing billing solutions. The billing solution was

instrumental in achieving key benefits such as reduction in bad debt and the visibility of information.

6.3. RESEARCH FINDINGS

This section describes the detailed findings from WaterCo. The findings have been arranged into the main themes of RBDN. Table 6.1 summarises the data sources that were analysed for this case. Figure 6.1 displays the RBDN for WaterCo.

Table 6.1: Data sources for WaterCo

ID	Interviewee	Duration
W001	Program Manager	1 hr 35 mins
W001a	Program Manager	1 hr 34 mins
W002	Project Manager	1 hr 14 mins
W002a	Project Manager	1 hr
W003	Change Manager	1 hr 15 mins
W004	Billing Director	1 hr 16 mins
W005	Customer Services Manager	1 hr 15 mins
W006	Implementation Consultant	1 hr 15 mins
ID	Observational Events	
W007	Tour of OMC	
W008	Attendance at Industry Quality Awards	
W009	Informal discussion with a member of the program team	
W010	Briefing about the functionality of tablet PCs	
ID	Documents Observed	
W011	Business case for the implementation of mobile solution	
W012	Overview of the program plan	
W013	Template for the functionality of mobile solution	
W014	Document submitted for Industry Quality Awards	

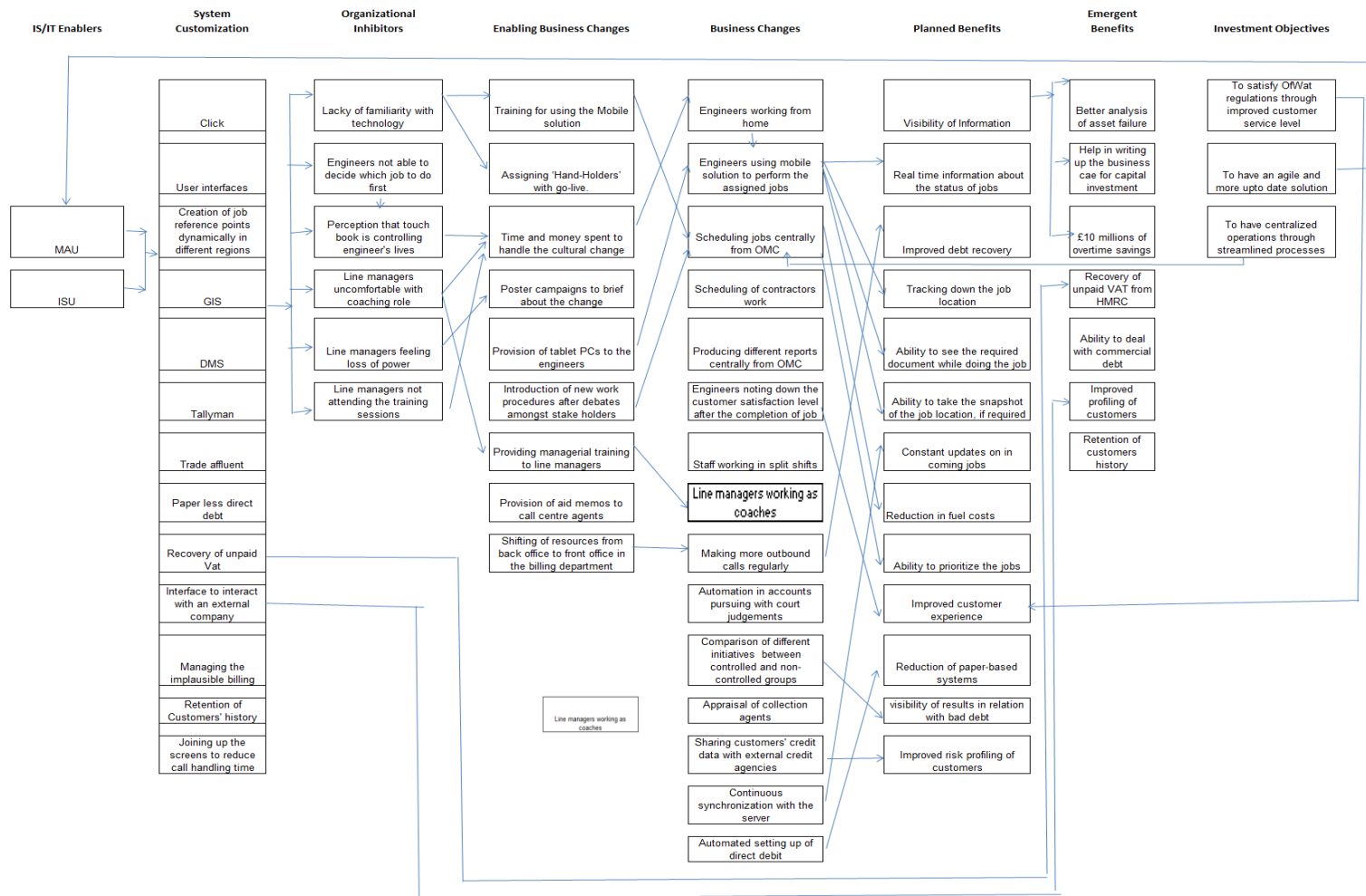


Figure 6.1: RBDN for WaterCo

6.3.1. IS/IT ENABLERS

As described in section 6.2, the organization decided to implement the mobile and billing solutions provided by SAP. SAP's mobile solution was instrumental in enabling the centralized planning, scheduling and reporting in the newly established OMC. SAP's billing solution enabled WaterCo to replace its ageing systems with the latest up to date solution. Because of risk averseness, WaterCo wanted to purchase solutions from an organization that had the market leading expertise in providing these solutions. Although, both solutions were very expensive the decision for selecting SAP was fully backed by the financial directors. The implementation of SAP's MAU and ISU was finished on-time and they went live in 2006.

Another reason for selecting the SAP was that the organization had already implemented number of other SAP modules. So it made business sense to extend the relationship with SAP by implementing the mobile and billing solutions.

6.3.2. SYSTEM CUSTOMIZATIONS

WaterCo did a number of customizations to both solutions. Some of these customizations were done to align the solutions with business priorities. Others were done after go-live, where an opportunity was identified and it was deemed necessary to modify the package in order to realize the identified opportunity.

It was identified by WaterCo that SAP's mobile solution didn't have the scheduling functionality that matched with the requirements of the organization. Hence, the OMC

decided to integrate an external software package (Bolt-on) called Click with the mobile solution. Click was specialist software that helped scheduling of different operations based on the pre-set algorithms provided by the WaterCo. The OMC also developed several interfaces to make the mobile solution more useable for its engineers. Another enhancement was undertaken to dynamically create job location references in SAP. SAP didn't have the ability to allocate geographical areas to different teams. This meant that a person from one team could be sent to any geographical location to perform a planned or unplanned work. This was regardless of whether this team has the specialities to perform the jobs in this particular area; which would have resulted in waste of resources. So the boundaries were drawn within the SAP for different geographical areas by doing a composite development. These boundaries were then used to create the job references for different geographical areas. The change manager explains:

'...we wanted to constrain Click to say 'if you are in one team, then you can only go for jobs of that team... So we have to find a way of making that...a physical boundary. And the physical boundary bit is the one that SAP couldn't do on its own. So, we created those boundaries. Boundaries are not always nice and neat because they are following water pipes and waste water pipes. So you create points along the way. So we created the points with a reference on them saying 'between that point and that point is where you have to work'...' (W003: Change Manager).

Recently, the water company added Geographic Information Systems (GIS) and Document Management System (DMS) to the mobile solution (Bolt-on) to help its engineers work in a more informed way. GIS helped engineers to find out the exact location of the planned or

unplanned jobs. Whereas, the DMS was used to attach or view the documents related with the jobs e.g. health and safety files. The program manager explains these developments:

'...So, in the new solution, this little flag would show them where the jobs are and it will show them where they are at the moment as well. We are also linking it to our document management system. So in this part of the screen, they will get any related documents. They can also do, for example if it was a gang, the person who is doing the job can take the picture and he can then attach that...They can also see what they have got to do and where is the problem...' (W001a: Program Manager).

SAP's billing solution didn't have the functionality for trade effluent. When an organization uses water, it puts the percentage of that water back into WaterCo's supply. So the organization gets an allowance against the effluent that it drops back to the supply. A calculation is used to determine what the organization has used and what it is returning and the amount to bill customers. But SAP didn't have this functionality. So the billing department had to do a composite development to be able to setup trade effluent.

After using the ISU for a while, it was identified by the billing department that the debt collection functionality within ISU didn't meet the requirements of WaterCo. So, the billing department also integrated an external package called Tallyman with the billing solution (Bolt-on). Tallyman is a specialist debt recovery tool that helped WaterCo to reduce bad debt. Another key development was done to manage the implausible billing. The customer services director explains:

'...We have lots of bills where we could have implausible reading. So the reading that comes in might not be in alignment with the reading that we have. We could have extremely high consumption, it could be a fault on the meter and it could be a leak

but we wouldn't send out this bill to the customer without a supporting letter to say 'we think something is wrong, you might know what it is but let's have a look'. So SAP didn't have the ability to kind of move that stuff away for us. So we have to build a lot of reporting mechanism...' (W005: Customer Services Director).

After using the system for a while, billing department did several other customizations to extract benefits from the billing solution. These were business-lead customizations i.e. the billing department identified the benefits which required customizations to be realized. The billing department enhanced the billing solution (through User-Exits) to retain the history of its customers. Previously, if a customer decided to move to a new location, SAP didn't retain the history and payment details of that customer. Two other developments were done through user-exits. The first was to setup the process of paper less direct debit for customers. The second development was done to recover unpaid VAT from HMRC. For profiling of customers into different categories of bad debt, the WaterCo had started sharing its' customers data with an external credit rating agency. It developed an interface to be able to interact with the systems of the external agency, which would provide them the necessary information. Also, when billing department started using the billing solution, it realized that the system was taking too much time to handle the customers' 'move-in & move-out' queries. Before the implementation of the solution, the average time for dealing with house moving query was 3 minutes. However, after the implementation, it went up to 25 minutes. So new interfaces were developed which joined up different screens for call centre agents such that they had to go through fewer screens. As a result the call handling time, for dealing with customers, was reduced to previous levels.

In summary, WaterCo made different types of modifications to its mobile and billing solutions. It integrated bolt-on's such as Click and Tallyman with the SAP solutions. It also made composite developments to be able to setup the trade effluent and to create the job references for different geographical regions. Interestingly, most of the customizations for OMC were done at the time of implementing the mobile solution. These were deemed necessary to fit the mobile solution with business requirements. By contrast, for the billing department, the majority of the customizations were done after the go-live. There were number of benefits that were identified once the organization started using the system and customizations were done to realize those benefits. As highlighted above, 3 out of 5 times, the billing department did these customizations through user-exits.

6.3.3. ORGANIZATIONAL INHIBITORS

WaterCo had to deal with number of inhibitors, which could have put the project of establishing the OMC in jeopardy. The first problem was employees' lack of familiarity with the technology. There were number of employees who struggled with the technology initially. To get these employees on board, they were provided separate training and extensive support throughout the process.

As a result of implementing the solution, field engineers weren't able to decide the sequence of the jobs assigned to them. Consequently, the engineers took the view that the technology was now controlling their lives, as they no longer had the autonomy of deciding the sequence of jobs. Another significant issue was related to line managers. The implementation of mobile solution also changed the nature of their jobs from being in

control to more supporting and coaching role and they were not comfortable with their new roles. According to the program manager:

'...I think, with hindsight, the people that are most impacted are the line managers because...the line manger [’s job] really changed, from somebody who is handing out pieces of paper saying ‘you would do this and you would do that’ to the coaching role, to support the other people. So they are out there now coaching and supporting. So their control buttons were completely vanished...’ (W001: Program Manager).

Also, during the implementation, some managers reacted against the project because of the changes in their roles. This led to a ‘mini-revolt’ during the project in which managers would not turn up for the training sessions. Their main concern was about the scheduling; a role which traditionally had always been assigned to them. They resisted the idea of centralizing the scheduling from OMC, which would remove their power of managing work of field engineers. Consequently, they felt loss of power and their ‘alpha male’ status.

Upon closer inspection of the data, it was identified that there are two different types of inhibitors ‘pre’ and ‘post’ i.e. the inhibitors occurred pre-implementation and post-implementation of the project. Examples of pre-implementation inhibitors were people not familiar with technology and line managers feeling loss of power and hence not turning up for the training sessions. For these inhibitors, organization was able to take remedial actions to address them. However, post-implementation inhibitors largely concerned the field engineers. Before the implementation of the solution, field engineers used to decide the sequence of the jobs themselves. However, after the use of solution they weren’t able to decide, as before, which job to do first. This created a perception amongst field engineers got perception that the technology was now controlling their lives.

6.3.4. ENABLING CHANGES

In order to tackle certain organizational inhibitors and to enable permanent business changes, WaterCo did a number of enabling changes. The organization took special measures to train and help people who were less familiar with the technology e.g. it decided to accompany these people with expert users (WaterCo named them as **hand-holders**) when the project went live so that they were comfortable using the new solution. The creation of OMC was a significant change for WaterCo. Hence, it spent huge amount of time and money to handle this change efficiently. This included running poster campaigns to explain to managers, who were feeling loss of power, the principle and ethos of the project. It was also a big change for field engineers. Field engineers were provided with tablet PCs to use the mobile solution. They were also given extensive training about the use of mobile solution on the tablet PCs.

Before the formation of OMC and implementing the solution, debates were held amongst senior managers to establish the new processes and procedures e.g. scheduling jobs centrally in the proposed OMC. Once finalized, an introduction was given to the employees about new procedures and practices.

Because line managers were no longer scheduling and assigning jobs to field engineers, they were now assigned the role of coaching and supporting employees. To enable them to perform their new roles effectively, line managers were also given the managerial training.

The change manager explains:

'...So we then have to retrain all of our managers and give them some managerial skills which were not about picking the tools up... we stretched that to make sure that

our managers are competent in managing the people. So we put them through a process of training so that we give them some skills first...' (W003: Change Manager).

The billing department also provided training and support sessions for employees about the use of the ISU solution. After the billing solution went live, the agents were also provided with the aid memos about the use of system. The billing department also introduced some new processes as well. For example, it shifted some of its resources from back office to front office that enabled call centre agents to make more outbound calls.

6.3.5. BUSINESS CHANGES

With the existing business processes, the organization didn't have a 'corporate' view of its operations. So there was a desire from the senior management, to increase this information and thereby improve the operations of the organization e.g. the ability to check whether a plan or unplanned job has been completed. Consequently, after debates amongst key stakeholders (Enabling Change), it was decided to establish the OMC. Establishing the OMC resulted in changes for a number of key business processes. Field engineers witnessed the most significant change. Before the creation of OMC and implementation of mobile solution, the line managers would assign the jobs to the field engineers. Field engineers then had complete freedom in planning the sequence of the jobs. However, the implementation of mobile solution suddenly took away the freedom of deciding and sequencing the jobs. Now instead of going to the depot, the field engineers worked from home and used the mobile solution to perform the job assigned to them. Line managers, subsequently, started working as coaches and mentors. Once the field engineers had completed an assigned job, they

would synchronize their solution with the server, which informed them about the next job.

The program manager explains about this huge change:

'...the other big thing that we have done was around about 2005-2006, we put all of our field engineers on our mobile solutions Engineers don't go to the depot now. They work from home now... We gave them one job at one time. So previously, they had total control over their day. So they would be like, and I am playing this out, if I go down this route, it would be fine and then I would stop there for lunch, then I would across there. And all of a sudden, they are getting a van outside their house and it says go so and so. They then go to so and so and complete the job. They then synchronize again and get the new job which might be sending them on a different place...' (W001: Program Manager).

Another significant change was the scheduling of jobs centrally from OMC, which was enabled by the mobile solution. As a result, the schedulers now managed their jobs centrally and on daily basis. Previously, different regions would run their own scheduling for different jobs. The line managers would then hand out the schedules to the field engineers. Because of disperse scheduling; there was no real time information about the status of different jobs. For example, if a customer rang up to enquire about the state of his burst pipe, it would be very difficult for the organization to provide the exact information to the customer about the status of the work. This centralization had also enabled production of different reports from the OMC rather than each division producing its own reports. Prior to the establishment of the OMC, different regions would produce the reports independently. This, sometimes, led to an inconsistent view of the operations and resources of the organization. With OMC, it was decided to produce centralized reports to get one version of the truth.

Additionally, alongside scheduling its own work, the WaterCo also started to schedule the work it outsourced to contractors as well.

Through the recent developments in the solution and provision of advanced tablet PCs, the field engineers noted down the customer satisfaction level as well. This meant that if, for some reason, the customer wasn't happy with the service provided, then the organization could take the immediate action to satisfy the customer. So, by noting down the customer satisfaction level, the organization could not only check its performance in relation with the regulations set by OfWat but it could also enhance the customer experience.

As part of transformation, management also decided to make changes in working patterns. This resulted in people working in split shifts based on their area of work. According to the project manager:

'...we have changed people shift patterns which is facilitated by IT. Like in the waste side of our business, people work 6 days a week... instead of 5 day window. Now, its 6 days and the days aren't actually from half past seven to half past three, its split shifts now. So someone would start at half past seven and work till two and someone [would start at two and] work till 10 and various [other] shifts...' (W002: Project Manager).

The OMC also changed the overtime work structures of its engineers after it started using the system (this is discussed in detail in section 6.3.7). The billing department also did a number of business changes alongside the implementation of the billing solution. The use of the billing solution provided efficiencies that led to the freeing-up of resources which were now being used to make more outbound calls. As a result, the billing department pursued a

larger number of bad debt accounts on daily basis. The billing department also automated the process of applying the judgment made by the county court. So whereas in the past, the organization had to engage its staff to write to customers to apply the county court judgement, this process was automated. Also, the process for setting up the direct debit was automated as well. Previously, to setup a direct debit, the organization sent a form to the customer which customer filled and posted back to the WaterCo. Then WaterCo filled it with the relevant information and posted it to the bank to setup the direct debit. So a development was done to automate this lengthy process. This resulted in a quicker process as the whole process was now done over the phone and using the solution.

The organization also started to measure the results of any new initiatives started by the billing department. Previously, different initiatives would be taken but it would have been impossible to check their results. After implementing the billing solution, the billing department divided the accounts into two halves called controlled and non-controlled groups. They ran an initiative for controlled group and then compared the results of the initiative with the non-controlled group. Consequently, this gave them the ability to check whether a benefit had been received or not. In order to measure performance, WaterCo also started to conduct appraisals of its collection agents. It arranged agents on a league table, so if an agent was at the top of the league table, it meant that he/she had resolved more cases and had collected more cash in a set period of time. Similarly, if an agent was at the bottom of the league table, it meant that he/she had resolved the least cases and had collected the least cash. The agents were, then, incentivized based on their position in the league table.

WaterCo had also started sharing its customers' credit data with external credit agencies. The credit agencies provided billing department with the credit history of the customers. This enabled WaterCo to improve its profiling of customers based on their credit worthiness. So from debt recovery perspective, rather than sending three letters, WaterCo only sent one letter. This is because the profiling information enables organization to realize that there will not be any benefit of sending more than one letter as the customer will not respond; so it will target those customers where chances of debt recovery are high. According to the billing director:

'...We...can [now] do the credit sharing which is new to the water industry. At the moment, there is no water company that shares credit data with credit agencies because up until recently, we have not been allowed to. But we have gone through a process where have agreed with the information commissioner that we can share credit data. We have worked out the rules with Experian about how we will share the data. So it is quite a big change...' (W004: Billing Director).

In summary, the billing department made business changes such as sharing the customers' credit data with credit agencies, pursuing more bad debt accounts and appraising its collection agents. However, it was the operations department that went through a major restructuring. The creation of OMC was a fundamental new way of working. It centralized the operations that were run locally previously. For example, previous to OMC, the local managers ran the scheduling independently. The creation of OMC alongside implementation of the mobile solution, took the scheduling job away from the local managers and it was now being done centrally from OMC. Also, field engineers worked from their homes instead of local depots. Instead of getting jobs from the depots, they now

received the jobs on their tablet PCs. Also, they were only provided one job at a time. After completing a job, they synchronized their solution with the server, which informed them about their next job. Consequently, these business changes led to the huge efficiencies for the organization. The next section discusses the benefits gained through these savings.

6.3.6. PLANNED BENEFITS

One of the biggest advantages of using SAP was the provision of much needed visibility in the organizations' operational and billing processes. For example, the billing solution provided visibility, which helped the billing department to track down a larger number of bad debt accounts. So it was able to continuously pursue and follow these accounts, which resulted in improved debt recovery. The billing department gained further visibility in relation with the bad debts after it started comparing the results of initiatives taken between controlled and non-controlled groups and appraising collection agents. Similarly, in the operations area, if a manager had created maintenance plans that didn't match the OMC's plans, then it became immediately visible to senior management. Also, before the implementation of the solution, there was not an efficient mechanism in WaterCo to track the status of different jobs due to local scheduling. At one stage, there were half a million outstanding jobs and the organization didn't know whether they were completed. Thus, the mobile solution centralized the scheduling which provided the real time visibility about the status of the various planned and unplanned jobs. This also meant that if a customer rang up to enquire about the status of his/her raised job, the organization had the ability to provide him/her with the relevant information, which enhanced the customer experience.

By scheduling the work of field engineers in an efficient way, the organization was able to reduce its fuel costs significantly. The mobile solution also provided OMC the ability of prioritizing the order of different jobs during the day. For example, if an engineer had been scheduled to go for a planned job during the day but all of a sudden a new job has been raised due to the flooding in a nearby area, then the OMC could take the decision whether to send engineer for a planned maintenance job first or whether to send him on a newly raised job caused by flooding. Also, before implementing the solution, the billing department ran majority of its processes on paper-based systems. Now, they were managed using the integrated billing solution e.g. the paper-less direct debit system. The operations department was also using different paper based systems to record proceedings of its operations. Whereas with the mobile solution, the OMC could record its operations electronically which helped reduce the need for paper based systems. The change manager explains:

'...People were supposed to send paper of pieces back. I am sure if an operations guy would be sitting here, he would say 'well, we send you these papers, you didn't update them'... but pieces of papers get lost. Sometimes, people write crap on it and no one understands it and they go misinterpreted. So we were in this mess where we didn't know whether the work has been done or not...So the win for them was no more pieces of paper...' (W003: Change Manager).

Another great advantage of the mobile solution was the continuous synchronization with the main server. Through continuous synchronization, field engineers got instant updates on any upcoming jobs. Recently, WaterCo did some enhancements in the mobile solution alongside providing new devices to the field engineers. Through these enhancements, the

field engineers could track down the exact location of the job, be it a planned or an emergent job. They could also see the documents related with the procedures of a particular job. The new developments enabled them, if necessary, to take the photographs of the job location.

Customer satisfaction was important for the WaterCo as its funding from the regulator was directly related to its customer service level performance. Every three months, OfWat picks up and contacts a random sample of customers who have interacted with the WaterCo. By speaking with customers, OfWat tries to judge the performance of the organization based on a set criterion. With the help of mobile solution, the field engineers now noted down, on their devices, the satisfaction level of customers at the end of assigned jobs. If a customer was dissatisfied, then WaterCo rang that customer and tried to resolve the issue before it escalated to OfWat. Consequently, the organization enhanced the customer satisfaction level that was instrumental in securing funding from OfWat.

In summary, the business changes in the operations and billing departments led to a number of key benefits. For example, the central scheduling from OMC resulted in reduction of fuel costs for the organization. Similarly, through the use of mobile solution, the field engineers were able track down the job location and see documents required to perform a job. The solution also continuously synchronized with the server, which provided field engineers information about the upcoming jobs. The organization gained the ability to improve customer experience after its engineers started noting down the customer satisfaction level after the completion of jobs. Also, the use of solution from the OMC not only enabled them to have real time information about the status of jobs but it also gave them the ability to prioritize different planned and unplanned jobs.

The shifting of resources from back to front office, allowed billing department to make more outbound calls, which resulted in improved debt recovery. Similarly, the ability to compare different initiatives between controlled and non-controlled groups and appraise collection agents provided the billing department much needed visibility in relation with bad debts.

6.3.7. EMERGENT BENEFITS

WaterCo was also able to achieve a number of emergent benefits through the use of SAP solutions. For example, by having the visibility of the information in OMC, it had better information about its assets and it was able to analyse asset failures in an efficient way. The visibility also helped the managers to write business cases required for any future capital investments. For instance, because of the visibility of information, a sound business case could be written stating the needs of extra resources for maintenance in residential water. Also, by having visibility in its operations, the OMC was also able to cut down its overtime budget significantly in waste water. Waste water is a weather driven part of OMC. If there was no rain, then the engineers finished their working day doing nothing but they were still being paid. They were called again in the evening at 8.00pm because that was the time when the organization received most calls from the customers. This meant that, apart from normal salaries, the organization was paying overtime to its engineers. Consequently, the organization decided that it needed to change the work structure so that engineers are called for work only when they are needed or during peak customers call times. The change manager explains:

'...we did a huge piece of analysis that was created by the forecasting and planning team which said the hours are wrong. According to this team, that was madness.

After sorting this out, we were able to save 10 million pounds from the overtime bill. And again, SAP MAU were really very critical in it. Because, you have got to be raising jobs in real time in SAP to see when the customers come in and then you have got to see when they get done and then you have got to see when they get rejected and when they don't fit. And you can see all of that in SAP quite easily actually...' (W003: Change Manager).

The billing department also spotted number of further benefits after the go-live of ISU. The first of them was the recovery of unpaid VAT from HMRC. Generally, when WaterCo sent bills to its customers, the amount of VAT from those bills was paid upfront to HMRC. However, if the customer didn't pay bill later on, then WaterCo had no mechanism to claim back that money from HMRC. The project manager explained that:

'...So say if you are a company and I issue you with the bill, at the moment the way that works is that say you owe us 1000 pounds and 200 pounds of that would be VAT. As soon as we issue that bill, we pay HMRC 200 pounds. If you don't pay us then that money, at the moment we have no way of identifying those 200 pounds. So at the moment, HMRC keeps those 200 pounds. We haven't got money from you because you haven't paid us....we can claim that money back now from HMRC...' (W002: Project Manager).

Another emergent benefit of the billing solution was the ability to deal with commercial debt alongside the residential debt. This capability was achieved through the integration of Tallyman. Also, through using the solution, WaterCo now profiled its customers by using the information provided from external credit agencies. This enabled them to place customers in different risk categories.

With the existing billing system, if a customer decided to relocate, then he would have had to open a new account as the billing system couldn't retain the history of this customer with the old address. Also, in some cases, customers couldn't open the new accounts with the new address because of certain credit checks e.g. in new housing states, you could open a new account only after living for one year at the new address. This used to add extra timing into the department's processing. Consequently, once the billing department started using the billing solution, it realized that it could achieve the ability of retaining the customers' history. This meant that the organization didn't need to create new accounts for the customers. It only needed the new address of the customers. However, to achieve this, the billing solution was customized as well.

Consequently, the organization realized a number of emergent benefits in both operations and billing departments. The major emergent benefit for operations was the savings of 10 million pounds in overtime payments. The billing department was able to reclaim the unpaid VAT from HMRC and retain the customers' history. However, to achieve these benefits, the billing solution needed to be customized.

6.3.8. OBJECTIVES

The first objective of the SAP implementation was to have a system that would satisfy the regulations set by OfWat. For example, OfWat randomly chooses a sample of customers and enquires about their interaction experience with their water provider. It then provides funding to water companies based on their performance in relation to the level of customer satisfaction. Hence, a rich customer experience is very important for WaterCo to meet OfWat's requirements for extra funding. The implementation of the mobile solution helped

WaterCo to meet this requirement. For example, the field engineers noted down, on their devices, the satisfaction level of customers at the end of assigned jobs. If a customer was dissatisfied, then WaterCo got engaged with that customer and resolved the issue; thus leading to an enhanced customer experience. Additionally, through centralized scheduling, the organization now had the information about the status of different jobs. This information was also used to inform customers about their enquiries of planned work, which ultimately helped organization to enrich the customer experience that it provided.

Another objective for implementing SAP was to replace the existing systems with the latest up-to-date software. For example, the existing billing system was a bespoke system, which was written specially for the WaterCo. The organization was struggling to find staff with the skill set to support the existing system. It did an upgrade by moving to Oracle 7 but that didn't resolve the issues and eventually the organization decided to install the SAP's billing solution. The program manager highlights that:

'...We talked to the people in Oracle and others. It was so multi-layered. It was like an onion with all these different layers on somewhere...The only way to up the performance again was to double the amount of hardware we had. It was very expensive but it was the only way to do it. So we all thought at time that this is so risk ...' (W001a: Program Manager).

The final objective of the project was to run operations more centrally and efficiently. Therefore, it was decided to create OMC with the purpose of synchronizing and streamlining the processes. Previous to OMC, scheduling was done regionally with no synchronization between different regions. This resulted in poor coordination of the resources required for different planned and unplanned jobs. Consequently, the establishment of OMC centralized

the planning and scheduling of the operations department. The mobile solution was instrumental to enable the new ways of working in the OMC.

6.4. SUMMARY OF FINDINGS

In this chapter the findings of two separate ERP projects from WaterCo have been presented. During the restructuring of its processes, WaterCo explicitly defined all the activities of the project and actively managed them to realize planned benefits. During the analysis of the data, several patterns emerged establishing links between different activities of the project. The following sections illustrate the relationships between different elements of the RBDN which were instrumental in realizing benefits.

As highlighted by informants, the mobile solutions (IS/IT Enablers) were instrumental in reducing fuel costs, enhancing customer experience, prioritizing the jobs and continuous synchronization with the server (Planned Benefits) and satisfying the OfWat's regulations (Investment Objectives). However, the organization faced a number of issues to realize these benefits. The introduction of technology created perceptions amongst engineers that technology was now controlling their lives. This happened as field engineers were not able to decide now about the sequence of their jobs (Organizational Inhibitors). To address this issue, the organization spent huge amount of time and money to address this cultural change and to provide the training for the use of mobile solution (Enabling Changes). Also, in order to realize the benefits, the organization changed number of processes. These included engineers using technologically rich tablet PCs to check and close the jobs assigned to them, changes in working patterns and engineers working from home (Business Changes).

Additionally, a number of screens were developed for mobile solution (Enabling IS/IT Changes) to make it more user friendly for the use of engineers.

Also, the use of mobile solution was instrumental in scheduling the jobs from OMC (Business Changes). Scheduling the jobs from OMC gave organization the ability to run it centrally and efficiently (Planned Benefits). The organization wanted to manage scheduling from OMC to streamline its processes (Investment Objectives). However, because of the introduction new processes (Enabling Changes) and of mobile solutions (IS/IT Enablers), the line managers were no longer scheduling the jobs in their respective regions. In the newly created structure, the managers were assigned the coaching and support roles. They were not comfortable with these roles and this was perceived as loss of power amongst managers (Organizational Inhibitors). To handle this matter, the organization ran several poster campaigns (Enabling Changes). The aim of these campaigns was to brief the employees about the purpose and ethos of change.

Another pattern that emerged was related with the organization facing numerous IT literacy problems whilst implementing solutions. For example, there were plenty of people who were not familiar (Organizational Inhibitor) with the newly implemented mobile solution (IS/IT Enablers). The management of case B was aware of this issue and gave full consideration to the people struggling with the use of technology. To resolve this issue, not only extensive training was provided about the use of the new system but also few people were assigned 'Hand-Holders' at the time of go- live (Enabling Changes). The Hand-Holders would sit in the vans with engineers not confident about using the solution and help them to get on with the new technology. Consequently, the engineers started using the advanced technology with richer information (Business Changes) which lead to the reduction in paper

based systems (Planned Benefits) as before the introduction of technology, engineers used to note down the relevant details on the papers. It was extremely difficult for the organization to keep a record of jobs as, due to numerous reasons, paper work was lost on some occasions. Hence, the mobile solution helped organization to meet its objective of having streamlined processes (Investment Objectives).

By using the technology with richer data (Business Changes), enabled by the mobile solutions (IS/IT Enablers), the engineers could track down the location of jobs with improved precision (Planned Benefit). However, the organization had to customize the mobile solution to create the job reference points dynamically for different regions. Also, with the provision of advanced tablet PCs (Enabling Changes) and through using them (Business Changes), the organization achieved visibility of information (Planned Benefits). Having visibility in its operations, the organization was able to save £10 million that it was paying its employees for working overtime (Emergent Benefits).

Several relationships involving the billing solution were also identified. For example, although the main purpose of implementing the billing solution (IS/IT Enablers) was to have a more advanced system (Investment Objectives) but the billing department realized that there was the opportunity to deliver a number of additional benefits underpinned by the newly implemented advanced system. To achieve those benefits, certain new processes were introduced in the billing department (Enabling Changes). One of the newly established processes was to share the customer's credit data with external credit rating agencies (Business Changes). This gave organization the ability to profile its customers on different risk categories (Planned Benefits). However, the organization had to customize the system to be able to interact with the external partners (Enabling IS/IT Changes). Another newly

established process was the comparisons of results of different initiatives between controlled and non-controlled groups (Business Changes). This helped billing department to get the visibility of results for different initiatives in relation with bad debt (Planned Benefits). During analysis, patterns emerged for emergent benefits as well. For example, the organization now had the ability to retain the history of its current and previous customers (Emergent Benefits). However, to achieve this benefit, the organization had to do an enhancement in the billing solutions (Enabling IS/IT Changes). Another customization (Enabling IS/IT Changes) was done to recover the unpaid VAT from HMRC (Emergent Benefits).

To achieve benefits from ERP systems, it has been suggested that organizations need to transform their structures as benefits are not delivered solely from the implementation of new technologies (see section 2.4). In WaterCo, the operations department went through a major restructuring. The creation of OMC was a complete new way of working for the employees of operations department. Setting up the OMC led to the centralization of scheduling, planning and reporting. This generated a range of benefits such as reduction in fuel costs, real time information about the jobs and enhanced customer experience. The billing department also did a few changes but they were more trivial in nature. In fact, the billing department didn't plan for any business change at the outset of the project. They considered implementing the ISU as an IT driven project rather than a business project; which only meant replacing the existing system with the new solution. The billing department also didn't put great emphasis on planning the benefits before implementing the solution. Less focus on benefits and limited organizational changes resulted in fewer initial benefits for the billing department. This finding suggests that, to realize the maximum

potential of the new technologies, it is important for such projects to be viewed as business transformation projects rather than simply IT development projects.

However, after the system went live, the billing department was very proactive in exploiting the system to realize emergent benefits. After using the system, they developed the ability to recover unpaid VAT from HMRC, retain customer history, improve the profiling of customers and address the commercial debt levels. The operations department also got achieved some emergent benefits but they did not proactively exploit the system or provide examples of innovations in business processes to realise more benefits. Consequently, it would appear that is not possible to plan all the benefits of an IT projects at the outset but further benefits can be leveraged post-implementation if there is sufficient focus and support for exploitation of emergent benefits.

There were also some organizational inhibitors that were apparent during the project. These included people not familiar with the technology, line managers feeling loss of power and not attending the training sessions. It was very important to resolve these inhibitors, as failure to do so would have knock-on effects for the success of the project e.g. if employees couldn't use the solution, the organization wouldn't have been able to achieve the majority of the planned benefits. To tackle these problems, WaterCo ran training sessions and poster campaign sessions, which resulted in the smooth transition of the project. Developing a sense of shared responsibility and user involvement were effective methods to address organizational inhibitors.

As highlighted in the research findings, WaterCo did a number of customizations to both mobile and billing solutions. Some of these customizations were done to fix the missing functionality in the SAP solutions; e.g. the OMC integrated Click to streamline the mobile

solution with its scheduling priorities. Other customizations were done to achieve an identified benefit e.g. billing department did an enhancement using to recover the unpaid VAT from HMRC. These results corroborate the findings from phase 1 which confirmed that it is impossible to have a completely un-customized system due to different organizational requirements.

It is also evident from the findings that the WaterCo did four different types of customizations; Bolt-on, User-Exits, Interfaces and Reporting. Bolt-on packages that were integrated with the mobile solution included Click, GIS and DMS. Similarly, Tallyman was integrated with the billing solution. Customizations done through user-exits included developments for paper-less direct debit, recovery of unpaid VAT from HMRC and retention of customers' history. The next type was development of interfaces; to join up the screens for call centre agents and new interfaces of mobile solution for field engineers using. Finally, the organization did a development for reports to manage implausible billing.

Different types of customizations generated many kinds of benefits. The addition of Click (as a bolt-on) enabled the management of OMC to do the efficient scheduling e.g. the organization can now had the functionality to prioritize for different planned and unplanned jobs. So it improved the ability of OMC in terms of decision making and planning which was a key managerial benefit. Similarly, the integration of Tallyman enabled the management of billing department to have an improved debt recovery. For example, the department was able to run the comparison of different initiatives, started for debt recovery. This provided the visibility of different initiatives in relation with bad debt. Visibility ultimately enabled management to take informed decisions for improved debt recovery; a key managerial benefit. It is worth noting that, both, Click and Tallyman were added to complement the

missing functionalities but generated a number of important benefits. Also, the integration of GIS and DMS provided organizational benefits to OMC. The addition of these two packages enabled field engineers to find the exact location of the job and also to see the related documents required to perform a job, respectively.

The enhancement done through user-exits produced some operational benefits. For example, the set-up of paper less direct debt led to the reduction of paper based systems. Similarly, the organization now had the ability of retaining the customer's history. This helped organization to reduce the costs of its operations. The organization did another enhancement, through user-exits, which empowered the billing department to recover the unpaid VAT from HMRC; an organizational benefit.

Also, the development of interfaces of mobile solution for the engineers led to the ease of use for the field engineers. Further, the development of new interfaces to join up the screens for call centre agents led to the reduction in call handling time. Both benefits achieved through development of interfaces are operational benefits.

Finally, the billing department did a development for reports to manage implausible billing. This meant that if there was some discrepancy in the consumption of water, the organization sent out a report to the customer stating that the meter reading was wrong and the organization needed to have a look at that to resolve it. This resulted in an operational benefit in the form of improved quality in billing.

After analysing the data from WaterCo, it is evident that the WaterCo realized a number of important benefits through billing and mobile solutions. Also, the billing department exploited the billing solution to enable new opportunities as well. However, overall, the

organization didn't actively follow any benefits management approach. There was no interest from the management in actively managing benefits. Incorporation of a benefits management approach may have been valuable for establishing the connections between various organisational activities and have made the benefits management journey more smooth and efficient. Additionally, it could also have meant setting some internal formal mechanisms to have a clear focus on the benefits in the post go-live stages of the project, as well. In fact, like traditional systems development projects, the focus on the benefits vanished very soon after the completion of the project.

CHAPTER 7: EMPIRICAL FINDINGS – MANUCO

7.1. INTRODUCTION

This chapter presents the findings of research carried out at a manufacturing firm in the UK. The chapter begins with the background of the case study. The subsequent section describes the main findings. As in the previous two chapters, the findings focus on two projects and are divided into 8 main sections: IS/IT enablers, system customizations, organizational inhibitors, enabling changes, business changes, planned benefits, emergent benefits and objectives. The chapter concludes with a summary of the findings.

7.2. BACKGROUND FOR MANUCO CASE

ManuCo is a manufacturing firm. Although it is based in England, it has operations around the globe. It is one of the leading players in the aircraft engine manufacturing industry. In the late 1990s, ManuCo decided to replace its legacy systems with an integrated ERP system which would provide a corporate level view of its operations and supply chain. Also, at that time, the firm started to have joint ventures with various regional organizations to expand its business in those regions. Naturally, it wanted to have a system that would help in communicating with its new partners.

As a result of implementing the ERP system, ManuCo went through a major restructuring. This included creating new job roles, hiring new staff, reengineering business processes and the provision of training for the new systems and procedures. ManuCo also undertook some customizations of the ERP system. These customizations were done to introduce functionality which wasn't available in the original ERP package. For the purposes of this

research this chapter reports on two projects. The first project was in Manufacturing Unit and the second project was in Repairs Unit. The following section presents brief summaries about these two projects before discussing the key findings.

7.2.1. PROJECT1: MANUFACTURING UNIT

Before the implementation of SAP's manufacturing solution, the manufacturing unit in ManuCo had 1600 separate legacy systems. As a result, the company didn't have a corporate view of its inventory and operations. Consequently at that time, different ERP systems were looked at and it was decided to implement SAP. As a result of implementing the SAP system, the manufacturing unit went through a major restructuring, which resulted in creation of new roles and jobs. The manufacturing solution proved instrumental in providing key benefits such as visibility of inventory and operations in manufacturing unit.

7.2.2. PROJECT2: REPAIRS UNIT

The main reason for implementing the SAP's repairs solution was the change in ManuCo's business model. This change resulted in selling aircraft engines on pay-per-usage basis rather than as a complete engine. Alongside this change in its business model, ManuCo expanded in international markets by establishing joint ventures internationally. Consequently, the company needed a system that could communicate with its international partners. Alongside the implementation of SAP, the repairs unit created new roles and jobs. Like manufacturing, the solution proved instrumental in providing key benefits such as visibility of inventory and operations in the repairs unit.

7.3. FINDINGS FROM MANUCO

This section describes the detailed findings from ManuCo. The findings have been arranged into the main themes of BDN. Table 7.1 summarises the data sources that were analysed for this case. Figure 7.1 displays the RBDN for ManuCo.

Table 7.1: Data sources for ManuCo

ID	Interviewee	Duration
M001	Manufacturing Manager	1 hr 30 mins
M001a	Manufacturing Manager	1 hr 45 mins
M002	Repairs Manager	55 mins
M002a	Repairs Manager	1 hr
M003	ProgramManager	1 hr 5 mins
M004	IT User	1 hr
M005	IT Manager	45 mins

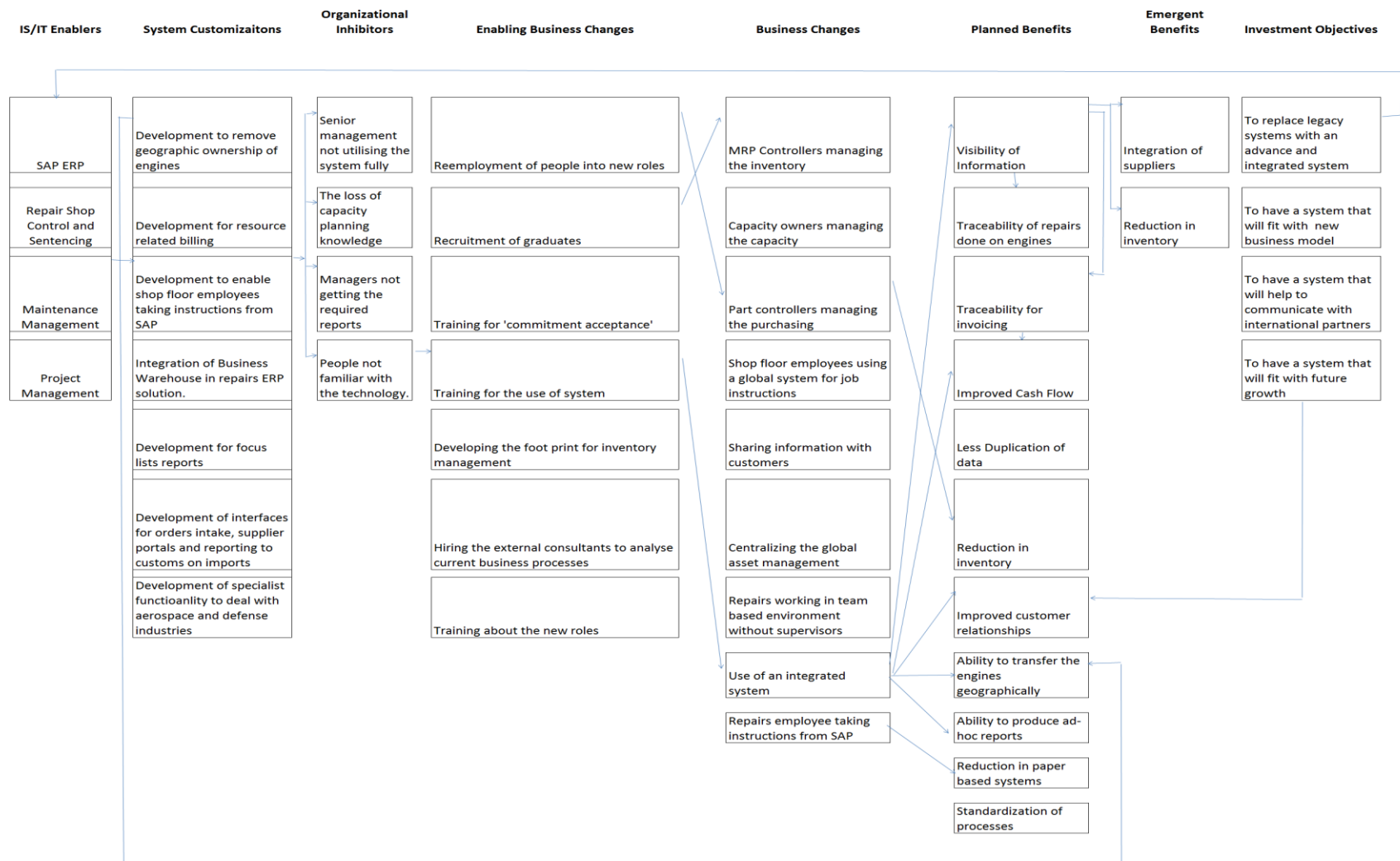


Figure 7.1: RBDN for ManuCo

7.3.1. IS/IT ENABLERS

As described in section 7.2, the organization decided to implement the SAP ERP solution in both the manufacturing and repairs units. The solution had the functionalities of repair shop control and sentencing. It also contained the maintenance management and project management functionalities as well.

7.3.2. SYSTEM CUSTOMIZATIONS

ManuCo did a number of major customizations to the solutions to align them to business priorities. One customization was writing new code for resource related billing. This was an important customization because of the new business model of Repairs unit. In the new model, instead of a fixed price, the customers were charged based upon the consumption of resources i.e. manpower and hours. Thus, the customization enabled ManuCo to bill the customers based on the resources consumed for the maintenance of the engine. The repairs unit did another enhancement to enable the shop floor employees to take repairs instructions from SAP. Previous to SAP, the shop floor employees used paper-based manuals to see guideline instructions required to conduct a repair job. The IT manager explains that:

'...we developed the code [enhancement] to enable them to use instructions from the system....We even built visual basic front end to allow the shop floor workers to book-on and book-off repair jobs to confirm the work they were doing so that they didn't have to log-in directly to SAP screen...' (W005: IT Manager)

The repairs unit also used user exits to remove the geographic ownership of engines. Because of the joint ventures in the new business model, if it was required, then engines would have to be transferred from country A to country B. Therefore, this customization was extremely important for ManuCo to collaborate with its international partners and to have the most efficient processes in the repairs unit. According to program manager

'...[for]the repair organization, SAP didn't offer...what ManuCo wanted... So the way the SAP is designed in setup, physically, you can't move this building and pull it elsewhere, so say it belongs to Loughborough or whatever. When you think of an engine, it could be here today, it could be in Singapore [tomorrow], being repaired. So, we had to change some of the functionality in there to make it not so tight to the geographic way the SAP set it up...' (M003: Program Manager)

After the post go-live, the repairs unit also integrated an external package Business Warehouse to the ERP solution. There was a lack of interest from the managers to utilise the SAP system because of its in-built reporting structure. This package enabled managers to produce different reports based on their requirements.

The manufacturing unit did a number of customizations as well. These customizations were driven by the business needs i.e. a business need was identified which required customizing the package. The first customization was the development of customized reports called focus lists. These reports would represent the data in accordance with the local business needs. For example, a focus list report for engine shortages can make it visible that a £10m engine has been held up just because of a small nut. The manufacturing unit also developed interfaces to extract data from the central ERP system. These included customer order intakes, supplier portals and reporting to customs on imports. Another enhancement was

developing a specialist functionality to deal with the customers from aerospace and defence industries.

Consequently, as highlighted by the informants, it was necessary for the repairs and manufacturing units to customize the ERP package to get a fit with business requirements. These included developing functionalities for resource related billing, removing the geographic ownerships of engines, enabling shop floor employees to take instructions from SAP, developing bespoke reports, developing interfaces and integration of external add-ons with the ERP system.

7.3.3. ORGANIZATIONAL INHIBITORS

ManuCo faced some organizational issues alongside the implementation of SAP. One of them was the difficulty senior management had understanding the system. Senior management had been using the legacy systems for a number of years. However, SAP's reporting structure was different to the reporting structures used by the traditional legacy systems. Therefore, there was less interest from them in understanding the system and in fully utilising it. This was also true for some older employees as well. These employees had worked their way up in the organization and knew their particular areas very well. But they weren't highly educated and hence, were not familiar with the newly implemented technology.

As a result of organizational restructuring, a large number of people were made redundant in the manufacturing unit. This resulted in the loss of valuable knowledge in terms of capacity planning. The manufacturing manager highlights that:

'...The other unintended consequence is that putting SAP in meant that we... got rid of old people. As a result, we ended up with a very poor capacity planning on the shop to the extent that it almost had to be reinvented again. And I was very disappointed with that....to clarify... capacity planning would be machines, men and shifts. You might have 3 or 4 different machines – maybe two of those machines can do a particular product, so it's about understanding the total load on those machines. How effective are they with the cutting materials – so there is a performance angle that to it...now, I would say that the SAP we got....people didn't seem to be able to getting anything within it to the level of details that we previously had ...' (M001a: Manufacturing Manager)

Before the implementation of SAP, the management in the repairs unit was able to get different types of reports from the legacy systems. These reports were modified based on the individual needs. But after the implementation, senior management weren't able to get the different variants of the reports. An IT user explains:

'...One of the other things was reporting out of the system; the directors and business managers... They got very, very frustrated especially in early days of SAP when they thought they would get all the information, they immediately wanted to see this that and the other because in excel you can produce pretty much everything. They get very frustrated that SAP couldn't do immediately that and replicate it. So reporting side of the system, initially it was very bad...So that was a huge issue at the time...'
(M004: IT User)

The manufacturing unit in ManuCo faced the dual problems of senior managers not understanding the system and loss of precious capacity planning knowledge as a result of

restructuring the manufacturing unit. Also, it was evident that the standard SAP package was unable to produce the type of reports required by the senior management of the repairs unit. It was also evident that all of these inhibitors occurred after the implementation of the solutions.

7.3.4. ENABLING CHANGES

In order to enable the management in repairs to produce the reports based on their individual needs, the ManuCo integrated an external package Business Warehouse to the ERP solution. ManuCo also arranged extensive training and briefing sessions for management and employees about the usage of the system.

In order to enable permanent business changes, ManuCo undertook a number of enabling changes. As part of restructuring, the manufacturing unit in ManuCo introduced the idea of 'Commitment Acceptance'. Its purpose was to instil a behavioural change in the employees of ManuCo. So rather than imposing a decision, the employees would have a rational discussion about a particular situation and then take the decision. The unit spent a significant amount of time and money training and explaining to its employees and management about commitment acceptance, about the new system and about the new business processes. Previously, the organization would have made a deal for providing engines to a new or existing customer; without realizing that it might have to double up its capacity to manufacture those engines. The manufacturing manager highlights its importance:

'...commitment of acceptance meant...rather than imposing something...so it will be like 'I will put 3 pieces for this thing' and you would be like 'no, no go and talk to the

individuals and be responsible for that'. The idea was that old organizational trenches should go. So you have got an intelligent conversation such as 'I can't do that because the titanium is not coming at the right rate. I can offer you 2,3 or 3,2'. And then you will go away and model that. So that sort of conversation...the other side to the 'commitment to the acceptance' bit is having an honest conversation rather than the director of Trent saying 'Trents are the future'...' (M001a: Manufacturing Manager)

Although training was provided to those employees unfamiliar with the latest technology a significant number of employees still struggled to complete computer based tasks in the new manufacturing structure. So, there was a need for people with computing skills that could work in the new organizational structure with the new technology. Therefore, ManuCo recruited a large number of graduates to work in the new structure. Also, as part of restructuring, people from existing functional units were redeployed to newly created roles. Before creating the roles of MRP controllers, the manufacturing unit also made a foot print of inventory management. It was envisaged that this would help MRP controllers in performing their jobs. The manufacturing manager explains that:

'...So they designed a foot print for inventory control...there was an amount of part numbers and amount of change that...one person could control. Also...as a bill of materials... if you have got 50 part numbers that are made up at sub-assemblies or complicated fabrications, then for those 50 parts you might need to schedule [another] 1000 parts. So they worked through this complexity, number of part numbers, number of levels it went through and what was feasible for one person...'
(M001: Manufacturing Manager)

Because of a shift in the business strategy, the repairs unit became a very important part of ManuCo. Therefore, the organization decided that from the business perspective, the repairs unit needed to be professionalized. It was also important to restructure the repairs unit because of the changes in the business model. Before restructuring, the organization hired an external consulting company to analyse the current business processes. The consulting company helped to deliver process efficiencies in repairs through business process engineering by changing and creating new job structures.

In order to be able to work in the new structure of the repairs unit, employees were given training for using the new system. There was also significant training to support the newly created roles e.g. about team building, the new business model and what the teams were expected to do.

In summary, before restructuring, the ManuCo spent a huge amount of time and money in training their employees about the new systems and business processes. To work in the new organizational structure, a large number of graduates were recruited. The manufacturing unit also prepared a footprint for inventory before creating the roles of MRP controllers. ManuCo hired an external consulting company for process improvements in the repair unit.

7.3.5. BUSINESS CHANGES

ManuCo went through a major restructuring as a result of implementing SAP. This led to the creation of new roles. One of these roles was a Materials Requirement Planning (MRP) controller. Previous to restructuring, planning of materials was done separately for different functional areas e.g. fans and compressors required to manufacture an engine would be planned separately without integration and oversight. However, after the restructuring,

MRP controllers planned the materials centrally. The role of MRP controller was to have the oversight and to ensure that all the materials were provided together to create an engine.

The manufacturing unit also created the capacity owner role after implementing the SAP system. Capacity owners managed the tools, machine and people required for different manufacturing functions. The manufacturing manager explained that:

'...The capacity owner is responsible for deciding which machine, which parts...have we got enough people, have we got tight machine tools, that sort of thing...so he would provide...the executive schedule for the area to say 'that's what you say you can do, I am now going to schedule that in'...So all of sudden, it was put in more scientific way if you like and the idea was that the information was contained within the system, so you can actually very quickly get overall pictures, that would be more accurate [for planning purposes]...' (M001a: Manufacturing Manager)

The manufacturing unit also created Part Controllers roles to work in the newly established centralized purchasing group. In the previous organizational structure, each functional unit within manufacturing would buy its own parts locally. There was no central body that was controlling purchasing. In fact, each functional unit would order whatever it wanted. Within the new structure, the part controllers would control the purchasing of the parts and make sure that there were no improper demands from different functions.

Implementation of SAP meant that the employees of ManuCo were now using an integrated system rather than separate legacy systems. Also, instead of using localized tools for manufacturing planning, the manufacturing unit was now using a global system for delivering the instructions to the shop floor. The IT manager explained that:

'...One of things that it has done is the integration of manufacturing in terms of shop floor instructions... By that I mean, storage of your planning for manufacturing in terms of the technical instructions together with your ERP system that is doing the actual launching of the materials in the shop floor. So, for example, printing of batch cards with operating instructions on it... it has been interfaced between ERP system and shop floor technical system...' (M005: IT Manager)

Previously in the repairs unit, the repair instruction manuals were paper based. The shop floor employees used paper manuals to follow repair job instructions. After implementing SAP, the shop floor employees in the repairs unit started using repair instructions from SAP and displayed on screen. Due to the change in its business model, the repairs unit also started sharing engine information with its customers, which was enabled by SAP. The repairs manager explains that:

'...in the new model, to attract new opportunities, they would share information with their airline customers... SAP provided them the infrastructure where they have got now are monitors on planes which can actually do selective prediction based on the performance of the engine which can say, e.g., o there is a vibration coming in there which means that there might be a problem in the bearing, you were due to come in our shop for a major overhaul... in three months' time, we think that you should pull that forward and by the way, we can offer you a space as well...' (M002: Repairs Manager)

For the purposes of global expansion, ManuCo made some joint ventures for repairs on the basis of equal partnership. The idea behind establishing these ventures was that if a customer bought an engine in Singapore, then it didn't make any business sense to bring

that engine to UK for the repair purposes; it would create logistic complications and provision of services from a centre in a different geographical location. However, this presented difficulties in terms of inventory management. There was no centralized information about inventories held by various factories e.g. a factory in country A would not be aware of the inventory held by the factory in country B. Inventory management in repairs was quite complicated because of the different types of inventories. This is because the bill of materials for aircraft engines is huge. Further, there are different types of materials that are required for various purposes. Repair units usually keep the newly ordered material in stock. It also stocks second hand material which is called 'serviceable used' and customer-owned materials. To reduce the complexity of the inventory management, the repairs unit centralized its global asset management. The repairs manager explained that:

'...So we built joint ventures for repair and services...now, you get all these big people talking about 'how do we manage the inventory worldwide' and without SAP, it would be difficult. For example, if you need a disc for a Trent engine, how would you know whether Singapore has got it as there would be no transparency and visibility... Well, if you can read all of those asset pools and know the state of that asset, is it repaired, is it useable, you know, is it scrap or not, that in itself is being enormous advantage. One of the things we did then was we centralized a global asset base to manage the repair work accordingly...' (M002: Repairs Manager)

Unlike the manufacturing unit, the repairs unit didn't create the roles of MRP controllers at the time of implementation. The repairs unit, initially, developed an algorithm in the system, which helped the quality engineers to make a decision about ordering a component after the inspection of an engine. However, the need for creating the role of MRP controllers was

realized after using the system for a while. The repairs manager explains the unfolding events that led to the creation of MRP controllers:

'...When I turned up in Repairs, I was told that there were 6 people who hadn't got the job. But these guys had real knowledge of the repairs organization. So what I did was that I created MRP organization and gave them the professional grading. But these guys really made a difference in the inventory... As a result of their work, we stripped out 3 million worth of inventory in a year... So, interestingly this was a classic attempt to use IT to empower and get the decision making delegated down to where the action is happening...' (M002a: Repairs Manager)

The implementation of the SAP solution also allowed the repairs unit to restructure its working in team based environments. These teams were set up based on the relevant skill sets for different engine modules. Because of the expertise on specific modules, these teams only managed materials and engaged with customers related with those modules. Also, these teams worked without supervisors. An IT user explains that:

'...In a ManuCo engine, we have 6 or 7 different modules. The module, for instance, is the HP turbine system which has everything in it e.g. HP turbine discs, HP blades, HP casing, etc. In order to reduce complexity, we gave one module to one team. So a team would be an expert on that module which would give them a better chance to plan. They had the expertise to strip that down. They had the inspectors in there to inspect it and also the expertise to build it back up again and then they sent the bits off for repair. And that team worked without supervisor...That's the closest I have seen an organization getting to process improvement that was woven into every individual's job...' (M004: IT User)

In summary, the main changes that were carried in the manufacturing and repairs units as a result of implementing SAP system were the creation of new roles; MRP controllers, Capacity Owners and Part Controllers. Other changes included sharing the engine data with the customers, using the centralized asset pool and using repair instructions from SAP. Another main change was the delivery of manufacturing instructions through SAP system.

7.3.6. PLANNED BENEFITS

One of the biggest benefits provided by SAP was the visibility of information in both manufacturing and repairs units. Because of the visibility provided by one integrated system, different divisions could now see each other's information and be aware of the constraints in terms of schedules and stock quantities. For example, because of improved visibility, the delivery dates for any new orders could be set realistically after checking the capacity and stock in an integrated manner. Further, through improved visibility, a factory in country A could see the inventory in country B and, if required, could transport the required components from country B to country A rather than purchasing the new component. Through visibility, the repairs unit could now trace and configure that the same (correct) components are going into the same engine. It was important for technical and safety issues, to have transparency and traceability when fitting components in an engine. Also, through improved visibility, the finance department could see what work had been undertaken on the engine and could create bills accordingly. Hence, the increased overall visibility provided an improved cash flow for the repairs unit. According to an IT user:

'...Having a centralized detail requirement from bill of materials where you can integrate the top level engine guy loading an engine, flushing it all the way through

to all the manufacturing parts down to the raw material, so that is got to be a good thing, having that all in one thing and being able to tag detailed purchase order for a raw material being supplied by someone in the USA. Being able to link that's going into that repair order, its brilliant. So having the integrated system from that perspective is great.... As a result, the company's profitability and cash flow has improved significantly in the recent years....' (M004: IT User)

Having one integrated system meant that there was less duplication of data. Also, because of the visibility, the ManuCo could adjust its operations if there was a major down turn. For example, after 9/11, ManuCo faced 40% reductions in planned deliveries at a very short notice. But because of the SAP, it was able to reschedule its entire supply chain of manufacturing very quickly. Ultimately, the visibility enabled ManuCo to plan its materials in a more informed way. According to manufacturing manager:

'...As a result of SAP, we have an improved and intelligent MRP function. Whereas before, it was all manual and it was all based within the peoples' minds...so certainly planning of materials was much better....so if I have to give you an analogy...it would be bit like American football where you have specialists for every area which is unlike our football, where we have guys who know about everything...' (M001a: Manufacturing Manager)

Also, the creation of the part controller's role was instrumental in enabling centralized purchasing, which provided ManuCo with the purchasing traceability. Inventory costs were another significant area that ManuCo was trying to reduce. Because of visibility and improved materials planning, the ManuCo was able to reduce its inventory significantly. That provided huge savings because of the ability to put the right materials in the right time

by MRP controllers. The manufacturing manager explained how SAP helped manufacturing unit to reduce the inventory:

'...[because of SAP] we were stripping millions and millions pounds worth of inventory out by tracing where people might have made mistakes... And you couldn't have done that in the old system. Previously, it used to be a period of manic activity where schedule changed might have gone and John Hunt would be there, 12 hours a day and I will see him a week later, coming out with the red eyes 'I have taken out 10 million pounds of purchase goods that people haven't recognized, I have stripped them out'. Now because it was SAP, you can just press a button and...' (M001: Manufacturing Manager)

Previous to SAP, because of different legacy systems, there was no consistent and corporate view of the organizational processes. For example, if a customer phoned up to enquire about his order, he didn't get a consistent answer. This would, sometimes, have knock-on effect in terms of customer relationships. In the competitive aircraft engines manufacturing industry, maintaining good relations with customers is of paramount importance. After the implementation of an integrated system, if a customer rang up asking about his/her part number, then his/her query was answered in a consistent way. Thus, the implementation of SAP enabled ManuCo to develop better relationships with its customers.

Having one globally integrated system also enabled ManuCo to transfer manufacturing of engines from one part of the world to the other. Previously, with the legacy systems, a local manufacturing unit might have planned all its operations and inventory locally which could not have been useable anywhere else. The IT manager explains that:

'...So if you wanted to lift V2500 to Germany and wanted Germans to build it instead, it would have been impossible or extremely expensive because Germans would not have anything into which you can plug all of yours UK data. By having a global system which runs from one data centre effectively, it was possible to be able to transfer the production from one part to the other. So what you have got is one data base that matters the most...' (M005: IT Manager)

With existing systems, the reporting and data visibility was a big issue. Through visibility and an integrated view, SAP has enabled ManuCo to drill down in the system and produce any business reports based on different requirements. So the ability, of ManuCo, in mining the data was much better than before.

Because of the governments' legislative requirements, the repairs unit has to keep the record of all their operations and stock. Before SAP, it was all done on paper and then passed back to administrators. The administrators would then put this information in a bespoke system specifically written for ManuCo. The implementation of SAP eliminated the need for administrators. The engineers in the repairs unit would take the instructions direct out of SAP and put them back in SAP themselves. This resulted in elimination of paper based systems. Implementation of SAP also helped the repair unit to get efficiencies by standardizing its processes. Through standardization, it could compare the performance of Branch A, for example, with Branch B. So if Branch B is taking longer than Branch A in repairing engines, then Branch B wouldn't get the work and it would go to Branch A even if they are part of the same organization.

In summary, it is evident that SAP provided a range of benefits in ManuCo. Most important of them was the visibility of information. Visibility, ultimately, allowed the manufacturing

unit to plan its inventory and operations in an advance and in a coherent manner. Inventory reduction led to the huge cost savings for ManuCo. SAP also provided the ability of drilling down the data and to produce different business reports. SAP helped the repairs unit to eliminate paper based working. It also provided the much-needed visibility of information. Ultimately, the visibility led to improved materials planning and profitability.

7.3.7. EMERGENT BENEFITS

Integration of suppliers emerged as a benefit once the manufacturing unit of ManuCo started using the SAP system. The program manager explains that:

'...we always wanted to simplify the number of suppliers and drive down the costs [but] I don't think [that came] at the time [of implementation]. I think that came after we got the system. I don't think that necessarily was in people's mind upfront...'

(M003: Program Manager)

The repairs unit in ManuCo didn't plan for inventory savings at the time of implementation. However, it was able to reduce its inventory significantly after using the system. So the repairs reduced the pool stock, which wasn't needed in the new business model.

7.3.8. OBJECTIVES

At the time of implementation, ManuCo had 1600 different legacy systems operating in the manufacturing unit. Consequently, one of the objectives for implementing the new system was to eliminate legacy systems with one integrated system. According to the program manager:

'...I think, the original business case [for implementing an ERP system] was... we had 1600 discrete systems, duplicating the data and we were spending a lot [of time] integrating the systems and the more we looked forward [at] the rate of change of technology... So the driver was to get away from the many systems that are running up around.....' (M003: Program Manager)

In late 1990s, ManuCo changed its business strategy. It started to change from a UK based aircraft engine manufacturing organization to a global business. This resulted in growth, in terms of size and in terms of orders. So ManuCo needed a platform that could help it to improve and expand its operations. ManuCo also wanted a system, which it could showcase to its customers to establish its credibility as a serious player. The manufacturing manager explains that:

'... the fact that the company was growing at a rate, it also meant that you [need to] had an infrastructure[system] which would actually support what was gonna be fairly new business model....so we were coming under pressure because of the size of the company. Because people like Boeing and Airbus rely on us, they were asking to us about what we were going to do to ensure continuous supply as up till now we have just managed it... but once we give you double orders i.e. you have to do twice as many engines for us. How can you guarantee us that you as our supplier are gonna be good. I think part of it was to convince our customers, Airbus and Boeing, that we are very serious about it. So we, ManuCo, are big player and we are investing [in our systems] heavily to try to manage ourselves better than before...' (M001: Manufacturing Manager)

Also, in the late 1990s, the business model for the repairs unit was changed. Instead of selling a complete engine, ManuCo started to sell engines on pay-per-usage basis. This meant that the new contracts would be made on the concept of 'power-by-hour' rather than 'total care'. The new business model meant that ManuCo would also provide maintenance of its engines now. Consequently, the main objective of repairs unit was to have a system that will fit well with its new business model. The repairs manager explains that:

'...At that time, the business model changed. So instead of buying the whole engine, the airlines would only buy on hourly basis and pay for that. In that scenario, repairs business became very important and centre-point in ManuCo. So repairs became quite big. It literally was almost a re-claimed organization at one point and then it grew and grew. And then you start to get more professional. So all of a sudden, you are literally gone from a back street garage to a full dealership over 8 to 10 years. And you have got to do something to professionalize that. So SAP was looked at and it was decided to implement it...' (M002a: Repairs Manager)

Also, at that time, the ManuCo entered a lot of joint ventures for repairs business internationally. So it required a system that could help it communicate with its international partners. Consequently, the manufacturing unit within ManuCo wanted to have an integrated system that would give them an integrated and overall view. Implementation of SAP system was also instrumental in expanding its operations and in becoming a global player. It is evident that repairs unit in ManuCo needed a system that would help it to operate with new business model. It also needed a system that would make it possible to collaborate with its international partners.

7.4. SUMMARY OF FINDINGS

In this chapter, the findings of two separate projects from ManuCo have been presented. ManuCo kept its focus on benefits during the restructuring of its processes. Therefore, all the necessary activities of the project were explicitly defined and actively managed to realize benefits. During the analysis of the data, several patterns emerged establishing the links between different activities of the project. The following sections illustrate these activities in terms of different elements of the RBDN, which were instrumental in realizing the benefits. As highlighted by informants, reduction in inventory (Planned Benefits) was achieved after the inventory was controlled by the MRP controllers (Business Changes). However, due to the nature of the role, several new graduates had to be recruited to work as MRP controllers (Enabling Change). They were also provided the training about their new roles (Enabling Change).

The use of an integrated system (Business Changes) resulted in improved relationships with customers (Planned Benefits). The relationships with customers were pivotal in increasing the business for the organization. An integrated system was, thus, instrumental in enabling the future growth (Investment Objectives). Staff were also given training about the use of the system (Enabling Changes). The use of an integrated system (Business Change) also generated the number of other key benefits. These included visibility of information and ability to transfer engines geographically (Planned Benefits). However, to be able to transfer engines geographically, the organization had to do an enhancement in the ERP package (Enabling IS/IT Changes). Ultimately, it enabled organization to be able to communicate with its international partners (Investment Objectives). Implementation of an integrated SAP

system also enabled organization to reduce its legacy systems (Investment Objectives), which resulted in less duplication of data (Planned Benefits).

Also, as part of restructuring, several people were redeployed into new roles (Enabling Changes). One of these roles was a part controller. In the new structure, part controllers managed the purchasing of different parts centrally (Business Change). This resulted in centralized purchasing (Planned Benefits) which ultimately led to the integration of suppliers (Emergent Benefits). Before restructuring, staff were also provided training about their new roles (Enabling Changes).

In ManuCo, both the manufacturing and repair units went through a major restructuring. Before implementation, different functional units would purchase their own parts, leaving no traceability. However, as part of transformation, the role of part controller was created to work in the newly established centralized purchasing group. The role of MRP controller was created to plan and manage the inventory centrally. Similarly, the role of capacity owner was created to manage the tools, machine and people required for different operations. As part of expansion, the ManuCo made joint ventures internationally. This fuelled the difficulty of managing the inventory. Hence, to reduce the complexity of inventory management, the repairs unit centralized its global asset management. As part of restructuring, the repairs units transformed its processes around working in teams that were set up based on the relevant skill sets for different engine modules. Because of the expertise on specific modules, these teams only managed materials and engaged with customers related with those modules. The ManuCo also introduced the idea of 'commitment acceptance'. This was an effort to step change the culture of ManuCo. As part of commitment acceptance, the employees were trained and educated to instil a

behavioural change. Its purpose was rather than imposing a decision, the employees would have a rational discussion about a particular situation and then take the decision. This was extremely important for the organization to maximize the efficiencies in the newly implemented organizational structure. Consequently, these findings reaffirm that in order to realize the maximum potential of the new technologies, it is important to view system development projects as business transformation projects rather than IT development projects.

The implementation of the solutions was finished on time. However, the ManuCo came across the organizational inhibitors after the project was finished. There was a lack of interest from the senior management in fully understanding and utilising the system. The senior management was used to using legacy systems and found it difficult to adjust to the newly implemented technology. The same issue was prevalent in senior employees as well who were not familiar with the use of the system. Due to the scale of restructuring program, a large number of employees left the manufacturing unit. This resulted in loss of precious knowledge in terms of capacity planning. This knowledge would have been useful for the newly created roles of capacity owners. Also, in the repairs unit, the management weren't happy with the newly implemented system as they weren't able to get the reports, based on their individual needs, from the system. To tackle these problems, the ManuCo integrated an external package Business Warehouse to the ERP solution. This enabled the management in repairs to produce the reports based on their individual needs. The organization also arranged the special sessions for extensive training and briefing to the management and employees about the usage of the system; which helped them in using the system to

perform their assigned jobs. Consequently, it is evident that shared responsibility and user involvement helped to address organizational inhibitors.

As highlighted in the research findings, the ManuCo did a number of customizations to ERP solutions for both the manufacturing and repairs units. Almost all of these customizations were done to fix the missing functionality in the SAP solutions so that these solutions were aligned with business priorities. It is also evident from the findings that the ManuCo did different types of customizations; Composite Developments, User-Exits, Reports, Interfaces and Bolt-on. Repairs did a composite development for resource related billing. This enabled the organization to charge the customers based on the consumption of resources rather than a fixed price. Repairs did another enhancement through user-exits to remove the geographical ownership of the engines. Removing the geographical ownership of the engines enabled organization, if required, to transfer the engines from one place to another; a key operational benefit. Repairs also customized the ERP solution through user-exits to enable the shop floor employees to take the instructions from SAP system. In the post go-live, the repairs unit integrated an external bolt-on called Business Warehouse. This was done to enable the management in repairs to produce different types of reports; an organizational benefit. The manufacturing depart also enhanced the package to produce the reports called focus lists. These reports enabled the manufacturing unit to produce reports based on the business needs. Manufacturing unit developed different interfaces to be able to extract the data from the ERP system. These included interfaces for order intake, supplier portals and reporting to custom on reports. Finally, the manufacturing unit developed two separate composite developments to be able to deal with the customers from aerospace and defence industries. It is evident from the findings that the majority of the

customizations were done from the repairs department. Consequently, these results corroborate the findings from phase 1 which confirmed that it is impossible to have a completely un-customized system due to different organizational requirements.

It is evident that the ManuCo went through a major restructuring and reaped a number of benefits due to the complementary technology. However, it didn't actively follow any benefits management approach. As highlighted in chapter 4, the adoption of benefits management approaches is extremely desirable in system development projects. It has been argued that, by adopting these approaches, organization will have improved the chances of realizing benefits from their IT investments. But, there was no initiation of a benefits realization program that would proactively manage the benefits throughout the life-cycle of the system. Incorporation of a benefits management approach could have been valuable for establishing the connections between various activities and have made the benefits management journey more smooth and efficient. Additionally, it could have also meant setting some internal formal mechanisms to have a clear focus on the benefits in the post go-live stages of the project, as well. There was no interest from the management in actively managing the benefits. Consequently, due the lack of focus on active benefits management, there were no steps taken from the ManuCo to manage the benefits in a comprehensive and holistic fashion.

CHAPTER 8: DISCUSSION AND CONCLUSIONS

8.1. INTRODUCTION

Organizations are continuously spending money on their ERP systems in an effort, at least in part, to derive more benefits from these systems. However, to date, the benefits realized from these systems remains relatively low (Ptak and Schragenheim, 2003). Against this backdrop, the findings of this research provide important new insights that can have significant implications for the organizations trying to maximize their returns from ERP systems. Previous chapters have discussed in detail the findings from exploratory phase and the subsequent case studies. In this chapter, an attempt is made to connect these findings with the key literature discussed in chapter 2. In doing so, the following section presents the cross-case analysis; i.e. the key differences and similarities between the three cases with respect to research objectives. The subsequent section discusses the key contributions of this study, in its entirety. After this discussion, the chapter concludes with the summary of the contributions, practical implications of the research and the limitations of this research.

8.2. PHASE 2: A CROSS-CASE ANALYSIS OF THREE CASE STUDIES

In phase 2 of this research, three in-depth case studies were conducted. The case studies were designed to build on the findings from phase 1. In each case study, the process of benefits realization for two individual projects was explored, in detail. Special attention was paid to understanding the activities that were necessary to realize the benefits from these projects. This focus was valuable not only to understand the organizational context of these projects but also for analysing the variability in the benefits ultimately realized. In this

section, of the thesis, a cross-case analysis is presented, which aims to compare and contrast the key findings from three case studies. More specifically, the remainder of this section takes each of the research objectives, relating to phase 2, in turn, and presents a cross case analysis of the findings, with respect to each. Table 8.1 summarizes the main findings from three case studies.

Table 8.1: Key Findings from EnergyCo, WaterCo and ManuCo

Findings	EnergyCo	WaterCo	ManuCo
IS/IT Enablers	<ul style="list-style-type: none"> • SAP CRM • SAP ISU 	<ul style="list-style-type: none"> • SAP MAU • SAP ISU 	<ul style="list-style-type: none"> • SAP ERP • Repair Shop Control and Sentencing • Maintenance Management • Project Management
System Customizations	<ul style="list-style-type: none"> • Composite Development • User-Exits • Bolt-on 	<ul style="list-style-type: none"> • User-Exits • Bolt-on • Reports • Interfaces 	<ul style="list-style-type: none"> • Composite Development • User-Exits • Bolt-on • Reports • Interfaces
Enabling Changes	<ul style="list-style-type: none"> • Development of new KPIs • Identification of waste in business processes • Developing new KPIs • Establishing support and coaching teams • Recruiting of new staff familiar with SAP systems • Training about the use of system • Consolidation of activities to reduce waste • Management and staff explained about the needs and the ethos of change • Recruitment of backfill staff 	<ul style="list-style-type: none"> • Training for using the Mobile solution • Assigning 'Hand-Holders' with go-live. • Time and money spent to handle the cultural change • Poster campaigns to brief about the change • Provision of tablet PCs to the engineers • Introduction of new work procedures after debates amongst stake holders • Providing managerial training to line managers • Provision of aid memos to call centre agents • Shifting of resources from back office to front office in 	<ul style="list-style-type: none"> • Reemployment of people into new roles • Recruitment of graduates • Training for 'commitment acceptance' • Training for the use of system • Developing the foot print for inventory management • Hiring the external consultants to analyse current business processes • Training about the new roles

Findings	EnergyCo	WaterCo	ManuCo
Organizational Inhibitors	<ul style="list-style-type: none"> • Lack of senior management support • Stakeholders feeling not being involved • Misconception about the use of system 	<p style="text-align: center;">the billing department</p> <ul style="list-style-type: none"> • Lack of familiarity with technology. • Resistance from Line managers. • Field engineers feeling that the technology was controlling their lives. 	<ul style="list-style-type: none"> • Lack of understanding about the system. • Loss of business knowledge due to organizational redundancies. • Senior management not fully buying-in to use the new system.
Business Changes	<ul style="list-style-type: none"> • Staff using an integrated system to deal with customers • Move to 1st contact resolution for customer queries • Relocation of back office teams in one place • Automation of pre-payment systems • Automation of information and billing services • Management of metering data through SAP • Change billing tariff only in one system • Management of data exchange through SAP • Movement of customers towards self-servicing route • Planning and evaluation of 	<ul style="list-style-type: none"> • Engineers working from home • Engineers using mobile solution to perform the assigned jobs • Scheduling jobs centrally from OMC • Scheduling of contractors work • Producing different reports centrally from OMC • Engineers noting down the customer satisfaction level after the completion of job • Staff working in split shifts • Line managers working as coaches • Making more outbound calls regularly • Automation in accounts 	<ul style="list-style-type: none"> • MRP Controllers managing the inventory • Capacity owners managing the capacity • Part controllers managing the purchasing • Shop floor employees using a global system for job instructions • Sharing information with customers • Centralizing the global asset management • Repairs working in team based environment without supervisors • Use of an integrated system • Repairs employee taking instructions from SAP

Findings	EnergyCo	WaterCo	ManuCo
	campaigns through SAP <ul style="list-style-type: none"> • New restrictions for campaign authorisations • Complaints compliance managed through SAP 	pursuing with court judgements <ul style="list-style-type: none"> • Comparison of different initiatives between controlled and non-controlled groups • Appraisal of collection agents • Sharing customers' credit data with external credit agencies • Continuous synchronization with the server • Automated setting up of direct debit 	
Planned Benefits	<ul style="list-style-type: none"> • Increased customer satisfaction with contact experience • Availability of more richer tool/information • More efficient use of Customer Service Agents: only focus on complex queries e.g. House moves • Reduction in customer contacts • Consistency while dealing with customers • Correct sales invoicing • Management of Bad Debt • More accurate meter 	<ul style="list-style-type: none"> • Visibility of Information • Real time information about the status of jobs • Improved debt recovery • Tracking down the job location • Ability to see the required document while doing the job • Ability to take the snapshot of the job location, if required • Constant updates on in coming jobs • Reduction in fuel costs • Ability to prioritize the jobs 	<ul style="list-style-type: none"> • Visibility of Information • Traceability of repairs done on engines • Traceability for invoicing • Improved Cash Flow • Less Duplication of data • Reduction in inventory • Improved customer relationships • Ability to transfer the engines geographically • Ability to produce ad-hoc reports • Reduction in paper based systems • Standardization of processes

Findings	EnergyCo	WaterCo	ManuCo
	reading estimates <ul style="list-style-type: none"> • Reduced bill revisions • Efficient price updating • Improved campaign management and evaluation • Improved compliance assurance through up to date information • Ability to offer product discounts at any point 	<ul style="list-style-type: none"> • Improved customer experience • Reduction of paper-based systems • visibility of results in relation with bad debt • Improved risk profiling of customers 	
Emergent Benefits	<ul style="list-style-type: none"> • Improved opportunities for cross-selling. • Ability to retain customers' history. • Ability to advise customers about the best energy tariff. • Ability to restrict access to different sales channels. • Ability to have the platform for smart metering • Retention of DD customers 	<ul style="list-style-type: none"> • Information about organizational assets. • Reduction in overtime budget. • Recovery of unpaid VAT from HMRC. • Ability to deal with the commercial debt. • Risk profiling of customers; through information from external credit agencies. • Ability to retain customers' history. 	<ul style="list-style-type: none"> • Integration of suppliers. • Reduction in inventory.
Objectives	<ul style="list-style-type: none"> • Improved positioning in relation to competitors • Cost savings through efficient business processes • Avoiding costs through reduced customer churn. 	<ul style="list-style-type: none"> • To satisfy OfWat regulations through improved customer service level • To have an agile and more upto date solution • To have centralized operations through streamlined processes 	<ul style="list-style-type: none"> • To replace legacy systems with an advance and integrated system • To have a system that will fit with new business model • To have a system that will help to communicate with international partners

Findings	EnergyCo	WaterCo	ManuCo
			<ul style="list-style-type: none"> <li data-bbox="1413 248 1807 316">• To have a system that will fit with future growth
Adoption of BM Approach	<ul style="list-style-type: none"> <li data-bbox="495 323 864 427">• Yes – but it developed its own BM approach based on local requirements 	<ul style="list-style-type: none"> <li data-bbox="976 323 1312 391">• The organization didn't follow any BM approach 	<ul style="list-style-type: none"> <li data-bbox="1447 323 1783 391">• The organization didn't follow any BM approach

8.2.1. ADOPTION OF BENEFITS MANAGEMENT APPROACHES

- **Objective 2 [O2]:** To explore and understand the approaches that organizations are adopting to manage the benefits that might be leveraged from their ERP investments.

The findings of this research confirm that all three case study organizations have realized a number of important benefits. However, it is evident from table 8.1, amongst them, there are some notable differences in the journey of benefits realization. After diagnosing through the RBDN, it is evident that the WaterCo has realized a number of important benefits through billing and mobile solutions. Additionally, the billing department exploited the billing solution to enable further opportunities as well. However, overall, the organization didn't actively follow any approach of benefits management. There was little interest from the management in actively managing the benefits. In fact, like traditional systems development projects, any focus on the benefits tended to vanish very soon after the completion of the project. This was also the situation in ManuCo. Like WaterCo, ManuCo didn't implement any explicit benefits management program, either in their repairs or manufacturing units.

Also because of the lack of focus on benefits management, there were no steps taken from both organizations to manage the benefits in any comprehensive and holistic fashion. This basically meant that, because the projects were run separately, the organizations were not able to transfer the successful lessons from one project to the other. Consequently, this resulted in ManuCo being unable to achieve benefits that could have been enabled through the interactions between the both solutions and the related business processes.

As is evident from table 8.1, EnergyCo, in sharp contrast to WaterCo and ManuCo, adopted and followed a benefits management approach. There was explicit focus on benefits and their management from the commencement of the project. Indeed, the focus of the transformation project was purely on benefits. As part of its BM approach, the EnergyCo managed the implementation of CRM and ISU systems concurrently. The organization recognised that by building synergies between the two projects, there was a greater likelihood of realizing the benefits. Also, managing the two projects with the portfolio approach meant that the EnergyCo had the holistic view of the benefits that would have arisen due to the interactions between CRM and ISU solutions.

Thus, with respect to objective 2, it is evident from above discussion that there were significant differences amongst the three case study organisations studied. Two organizations, WaterCo and ManuCo didn't actively follow any BM approach. In contrast with these two organisations, EnergyCo did implement a BM approach.

8.2.2. BENEFITS REALIZATION THROUGH BUSINESS TRANSFORMATION

- **Objective 4 [O4]:** To further understand the role of organisational change in leveraging benefits from ERP implementations.

To achieve benefits from ERP systems, the organizations need to transform their structures as benefits don't arise solely from the implementation of new technologies. As is evident from table 8.1, all three case study organizations, to varying degrees, changed their business processes. In ManuCo, both the manufacturing and the repairs unit went through a major restructuring. Before implementation, different functional units would purchase their own parts, leaving no traceability. As part of transformation, the role of the 'Part Controller' was

created to control the purchasing of parts in the newly established centralized purchasing group. Also, the role of 'MRP Controller' was created to plan and manage the inventory centrally. Similarly, the role of 'Capacity Owner' was created to manage the tools, machine and people required for different operations. As part of its expansion, the ManuCo entered into more joint ventures, internationally. This exacerbated the problem of managing the inventory. Hence, to reduce the complexity of inventory management, the repairs unit centralized its global asset management. Further, as part of restructuring, the repairs units transformed its processes around working in teams that were set up based on the relevant skill sets for different engine modules. Because of the expertise on specific modules, these teams only managed materials and engaged with customers related with those modules.

As displayed in table 8.1, in WaterCo, the Operations Department also went through a major restructuring. The creation of OMC was a complete new way of working for the employees of Operations Department. Setting up the OMC led to the centralization of scheduling, planning and reporting. This generated a range of benefits such as reduction in fuel costs, real time information about the jobs and enhanced customer experience. The Billing Department also made a few changes but they were very trivial in nature. In fact, the Billing Department didn't plan for any business change at the outset of the project. They considered implementing the ISU as an IT driven project rather than a business project; which only meant replacing the existing system with the new solution. Moreover, the Billing Department didn't put any great emphasis on planning the benefits before implementing the solution. It seems likely that less focus on benefits and limited organizational changes resulted in fewer initial benefits for the Billing Department compared to Operations Department.

However, in comparison with WaterCo and ManuCo, the most efficient program for organizational changes was conducted by EnergyCo. The programme of organizational changes was less troublesome for EnergyCo than it was for either WaterCo or ManuCo. As part of the transformation program, EnergyCo embarked on transforming the organizational structures and behaviours of its employees. It defined all the activities before the project for the smooth transition of organizational changes. The organization first changed the design of its processes and the technology was then brought in to operationalise the changes made in the organizational processes. The underlying theme of these structural changes was to deliver process efficiencies. Some of these changes resulted in a complete new way of working. For example, the staff of EnergyCo had used both spread-sheets and emails to exchange the information to put together a marketing campaign. But as part of transformation, the central database was used to get information about different aspects of the marketing campaign, before automatically compiling it. Similarly, the staff didn't choose the target group of customers to run a campaign; it was now determined by the system. Also, the organization took initiatives to move its customers towards self-servicing route which led to the automation of some of its services. To gain the synergies, the organization also located the back office teams from different locations to one place. This meant that the most customer queries are now resolved at the first point of contact. Another big change for billing department was to manage the metering data and the exceptions through SAP. Although, both the Billing and Customer Services Department went through restructuring, the changes made within the Billing Department were trivial compared to the changes within the Customer Services Department. It is not to say that, the billing department didn't plan for any changes or benefits. Indeed, it is just to highlight that, in comparison, it was the staff of customer services department who saw a significant change in their ways of working.

But ultimately both customer services and billing reaped a number of benefits such as improved customer satisfaction, reduction in customer contacts, correct sales invoicing and reduced bill revisions etc.

Thus, with respect to objective 4, it is evident from above discussion that there were number of similarities amongst the three case study organisations studied. All three organizations, initiated the change within their business processes to realize number of benefits. ManuCo created new roles in both repairs and manufacturing to work in new structures. WaterCo established OMC to overhaul its operations department. Finally, EnergyCo also conducted changes both in customer services and billing department.

8.2.3. ORGANIZATIONAL INHIBITORS

- **Objective 7 [O7]:** To understand the effect of organizational inhibitors on business transformation, in the process of benefits realization.

The findings from previous sections indicated that many organizations find it difficult to actively contemplate and deliver business changes during their systems development projects. The results from phase 1 suggested that it might be due to organizational inhibitors such as power, politics and user resistance. Based on phase 1 findings, organizational inhibitors were included in the research framework and RBDN, with the point of view, that they should be tackled before the implementation of the project to avoid any escalation of the issues. However, the findings from phase 2 suggested that there were two different types of inhibitors; '*pre*' i.e. the inhibitors that occurred pre-implementation and '*post*' i.e. the inhibitors that occurred post-implementation of the project. An example of a pre-inhibitor occurred at WaterCo, where line managers, who felt that the system impinged

upon their power, decided not to attend the training sessions. To tackle these problems, the organization ran training sessions and poster campaigns which resulted in the smooth transition of the project. Similarly, in WaterCo, before the implementation of the solution, field engineers used to decide the sequence of the jobs themselves. However, after the use of solution they weren't able to decide, as before, which job to do first. This created a perception amongst field engineers got perception that the technology was now controlling their lives; post-inhibitor.

In ManuCo, the implementation of the solutions was finished on time. However, as is evident from table 8.1, it subsequently encountered a number of organizational inhibitors after the project was finished i.e. post-inhibitors. For example, there was a lack of interest from the senior management in fully understanding and utilising the system. The senior management was used to of using the traditional legacy systems and hence found it difficult to adjust with the newly implemented technology. The same issue was prevalent in senior employees as well who were not familiar with the use of the system. Also, due to the scale of restructuring program, a large number of employees left the manufacturing unit. This resulted in loss of precious knowledge in terms of capacity planning. This knowledge would have been useful for the newly created roles of capacity owners. Additionally, in repairs unit, the management weren't happy with the newly implemented system as they weren't able to get the reports, based on their individual needs, from the system. To tackle these problems, the ManuCo implemented and integrated an external package Business Warehouse to the ERP solution. This enabled the management in repairs to produce the reports based on their individual needs. The organization also arranged the special sessions

for extensive training and briefing to the management and employees about the usage of the system; which helped them in using the system to perform their assigned jobs.

Unlike ManuCo, most organizational inhibitors in EnergyCo occurred before or during the implementation project. It faced stiff resistance from some directors who thought that there was no need for restructuring on such a significant scale. Similarly, there was a perception amongst staff within the Metering Department that they were not consulted in finalizing the changes and the benefits of the transformation project. In addition, after the implementation, staff in the Customer Services Department viewed the system as a burden as it constrained them from their previous ways of working; post-inhibitor. To tackle these problems, the EnergyCo ran the briefing sessions to explain the purpose and ethos of the project. It also held the coaching sessions to explain the related stake holders about the efficiencies that would be enabled through the transformation project. These steps, ultimately, resulted in the smooth running of the transformation project and the implementation of the both solutions.

Thus, with respect to organizational inhibitors, it is evident from above discussion that there were a number of similarities shared amongst all three case study organisations. All three organizations, encountered organizational inhibitors before, during or after the completion of their system development projects. Consequently, the three organizations, where possible, took special measures to tackle these issues to increase the likelihood of benefits realization from their IT investments.

8.2.4. EMERGENT BENEFITS

- **Objective 6 [O6]:** To understand the process of leveraging emergent benefits from ERP implementations.

In traditional system development projects, any focus on benefits tends to quickly disappear once the new software has been successfully implemented. However, EnergyCo initiated a variety of on-going benefits realization activities as part of the transformational program.

Because of their transformation program, the EnergyCo maintained its focus on benefits.

There was an understanding amongst the senior management that the benefits wouldn't be realized merely through the on-time and on-budget delivery of the technological solutions.

Thus, as part of benefits realization activities, the organization adopted an on-going exploitation strategy which helped it to realize a number of emergent benefits through regular reviews, after the go-live of the software solution. For example, the Customer Services Department, after using the system, realized that they now had the ability for cross and up selling to the customers e.g. boiler maintenance. Similarly, as evident from table 8.1, the EnergyCo now had the ability to build the history of its customers which could be utilized to retain its Direct Debit customers. Also, the SAP solution provided a platform which could be utilized to manage the roll out of smart metering in the near future.

As displayed in table 8.1, unlike EnergyCo, the ManuCo only realized couple of emergent benefits (supplier integration and reduction in inventory in repairs). For ManuCo, the adoption of an explicit benefits management approach may well have resulted in more emergent benefits. This was also the case in WaterCo. Although, the Operations Department in WaterCo realized some important emergent benefits, they did not

proactively exploit the system, nor did they initiate any innovations with regard to their business processes, to get more benefits. The Billing Department, however, after going live was very proactive in exploiting the system to realize the extra (emergent) benefits. After using the system for a while, they managed to realise the following benefits: the ability to recover unpaid VAT from HMRC; retaining the customers' history, improved profiling of customers and dealing with the commercial debt.

Thus, with respect to emergent benefits, there were some notable differences amongst the three case study organizations. All three organizations realized emergent benefits, albeit, with a varying level of success. Amongst the three, EnergyCo was more successful because of its explicit focus on benefits. There was a mixed story in WaterCo; its Billing Department was more proactive in pursuit of emergent benefits as compared to the Operations Department. Finally, ManuCo, was able to realize only couple of emergent benefits.

8.2.5. BENEFITS THROUGH CUSTOMIZATION

- **Objective 5 [O5]:** To understand the role of system customisation in leveraging benefits from ERP implementations.

As highlighted in the table 8.1, all three case study organizations enacted a number of customizations to their implemented solutions. Different types of customizations generated different kinds of benefits. For example in WaterCo, the addition of Click (as a bolt-on) enabled the management of OMC to undertake more efficient scheduling e.g. the organization can now had the functionality to prioritize for different planned and unplanned jobs. So it improved the ability of OMC in terms of decision making and planning which was a key managerial benefit. Similarly, the integration of Tallyman enabled the management of

billing department to have an improved debt recovery. For example, the department was able to run the comparison of different initiatives, started for debt recovery. This provided the visibility of different initiatives in relation with bad debt. Visibility ultimately enabled management to take informed decisions for improved debt recovery; a key managerial benefit. Also, the integration of GIS and DMS provided organizational benefits to OMC. The addition of these two packages enabled field engineers to find the exact location of the job and also to see the related documents required to perform a job, respectively. The enhancement done through user-exits produced some operational benefits. For example, the set-up of paper less direct debt led to the reduction of paper based systems. Similarly, the organization now had the ability of retaining the customer's history. This helped organization to reduce the costs of its operations. The organization did another enhancement, through user-exits, which empowered the billing department to recover the unpaid VAT from HMRC; an organizational benefit. Also, the development of interfaces of mobile solution for the engineers led to the ease of use for the field engineers. Further, the development of new interfaces to join up the screens for call centre agents led to the reduction in call handling time. Both benefits achieved through development of interfaces are operational benefits. Finally, the billing department did a development for reports to manage the implausible billing. This meant that if there was some discrepancy in the consumption of water, the organization sent out a report to the customer stating that the meter reading was wrong and the organization needed to have a look it that to resolve it. This resulted in an operational benefit in the form of improved quality in billing.

The EnergyCo did two customizations for CRM solution and three for ISU solution. It is also evident from the findings that the EnergyCo did three different types of customizations;

Composite Developments, User-Exits and Bolt-on. Composite developments were done for data exchanges with industry and pre-payment meter management. Customizations done through user-exits included developments for sales discounts and restriction of access to sales channels. Similarly, a Bolt-on package, Tallyman, was integrated with ISU. Different types of customizations generated different kinds of benefits. The first enhancement done through user-exits empowered the organization to have flexibility for providing discounts at different points in time; a key organizational benefit. For example, the agents were able to offer discounts at point of sale or at the anniversary. The second enhancement done through user-exits enabled the management of EnergyCo to restrict access to different sales channel; a managerial benefit. It enabled the management to ensure that the agents from a particular channel only sold the products sanctioned in their channel. Similarly, the addition of Tallyman (as bolt-on) enabled the billing department to have an improved debt recovery; a managerial benefit.

ManuCo also undertook a number of customizations to their ERP solutions for both manufacturing and repairs units. However, unlike WaterCo and EnergyCo, majority of these customizations were done to fix the missing functionality in the SAP solutions so that these solutions were streamlined with the business priorities. It is also evident from the findings that the ManuCo did different types of customizations; Composite Developments, User-Exits, Reports, Interfaces and Bolt-on. To realize an identified benefit, Repairs did an enhancement through user-exits to remove the geographical ownership of the engines. Removing the geographical ownership of the engines enabled organization, if required, to transfer the engines from one place to another; a key operational benefit. In the post go-live, the repairs unit also integrated an external bolt-on called Business Warehouse. This was

done to enable the management in repairs to produce different types of reports; an organizational benefit.

Consequently, with respect to objective 5, there are number of similarities and distinctions across all three case study organisations. For example, in terms of similarities, all three organizations enacted customizations via user-exits to realize number of benefits. Whereas, in terms of distinctions, only WaterCo developed interfaces for the purposes of attaining a benefit. . Additionally, all organizations customized their software packages at different stages. It is also evident from these findings that, compared with EnergyCo and ManuCo, WaterCo did most number of customizations to realize the benefits. Further, ManuCo did only two customizations purely for benefits purposes.

Thus, it is evident from the discussion above that there are some obvious similarities and differences, amongst the three case studies, with respect to managing the system development projects. The next section contextualizes the findings from Phase 1 and 2, in light of the literature discussed in previous chapters, to understand the important, new contributions that this study has generated.

8.3. CONTRIBUTIONS THROUGH RESEARCH FINDINGS

This section discusses the main contributions of this study in the light of research findings. In doing so, an effort has been also made to highlight the importance of these contributions, in light of the extant literature.

8.3.1. CONTRIBUTION 1: ADOPTION OF BENEFITS MANAGEMENT APPROACHES

As discussed in chapter 2, the adoption of benefits management approaches is extremely desirable in system development projects. It has been argued that, by adopting these approaches, organization will have improved chances of realizing benefits from their IT investments (Peppard et al., 2007).

Phase 1 of this research project was conducted to explore the extent to which organizations attempted to follow an explicit benefits management approach, when implementing and using ERP systems. The findings from phase 1 suggested that there was little motivation, in the surveyed organizations, to adopt and follow these approaches. These findings contribute, by highlighting, that the organizations perceived existing benefits management approaches to be rather '*academic*', and of little practical use in system development projects i.e. they didn't follow these approaches because they perceived them to be difficult to implement in real project settings. Thus in the specific context of ERP projects, the findings from Phase 1 of this study confirm Ashurst et al.'s (2008) more general conclusion that, in practice, not many organizations are following these approaches.

The analysis of case studies also confirm that there are very few organizations who are proactively managing their benefits through benefits management approaches. Amongst the three case studies conducted, WaterCo and ManuCo didn't follow any benefits management approach at all.

Thus, with respect to the adoption of BM approaches, in the context of ERP projects, this study makes an important contribution by providing empirical insights about what organizations are doing actually to manage their benefits. More specifically, the study

contributes by confirming that there is little appetite for adopting BM approaches. The research findings also indicate that the most significant reason for not following the existing BM approaches is due to the inability of these approaches to be implemented in real project settings.

8.3.2. CONTRIBUTION 2: BENEFITS REALIZATION THROUGH ORGANIZATIONAL CHANGES

As highlighted in chapter 2, organizational changes are one of the most important attributes of benefits management approaches (Doherty et al., 2012). Benefits management can facilitate the process of organizational changes to complement the newly implemented technology. Most information system projects will involve a degree of organizational change but it is especially true for complicated and highly integrated packages, such as ERP systems. Changes caused by ERP systems can be differentiated by their capacity of reaching to a large number of functional units within an organization (Staehr et al., 2012).

The findings from three case studies confirm that ERP implementations have a profound impact on organizational processes, structure and culture (Markus, 2004). However, where this study provides an important new contribution is in highlighting the role of organisational changes in facilitating the realisation of business benefits, in the context of ERP projects. Our results also support the notion that the organizations that put emphasis on business transformations, alongside the IT investment, tend to do better when compared with the organizations that don't (Hughes & Scott Morton, 2006). For example, the Billing Department in WaterCo engaged in minimum organizational changes which resulted in very few business benefits.

Another important contribution stemming from the findings is that business transformation can occur at various stages in the full systems development life cycle. For example, EnergyCo and WaterCo planned and implemented their new working structures before selecting and implementing a technology that would align well with newly created structures. By contrast, ManuCo, predominantly, implemented the ERP system and then changed its structures and processes, to fit the requirements of the ERP system. A third model of organisational change that all three case organisations enacted, at various points in their ERP projects, was the initiation of change to leverage specific benefits. For example, the Billing Department in WaterCo, automated the process for setting up the direct debit. Previously, to setup a direct debit, the organization sent a form to the customer which customer filled and posted back to the WaterCo. Then WaterCo filled it with the relevant information and posted it to the bank to setup the direct debit. However, as a result of automation, process was much quicker and the direct debit was now setup over the phone and using the solution. This, ultimately, resulted in reduction of paper based systems for WaterCo. This implies that business transformation is extremely crucial to attain benefits, however, organizations should have the flexibility to adopt an approach that best suit their contexts and that would maximize the realization of benefits.

Enacting the business changes associated with systems development projects is not an easy task (Clegg et al., 1997; Doherty and King, 1998). Hence, a major reason for the failure of majority of system development projects is the inability of the organizations to manage IT-enabled organizational change (Doherty et al., 2003; Peppard and Ward, 2005). A further important contribution from this study, is the insight that the management of IT-related organisational change can be particularly problematic in the context of ERP projects. Indeed

all the case organizations, to a greater or lesser extent, found it difficult to manage process and organizational changes while implementing their ERP systems. This could also explain the reason of why a huge number of organizations are still not engaging in organizational changes while implementing ERP systems (Panorama Consulting Solutions, 2011). The management in EnergyCo was aware of this issue from the outset of the project. Hence, before implementing any solution, it made a robust plan for the organizational changes. The technology was implemented later on to complement the changes in the business processes. These findings confirm that in order to realize the maximum potential of the new technologies, it is very important to take the system development projects as business transformation projects rather than the IT development projects. The findings from three case studies also corroborate the findings of phase 1. The findings from the exploratory phase highlighted that organizations should focus on business transformation in order to achieve an improvement in their performance rather than focusing on the 'usual' delivery of the technological artefact on time and within budget.

Thus, with respect to the organizational changes, the research findings reaffirm that organizational changes hold crucial importance when it comes to attaining the benefits from IT projects, but specifically in the context of ERP systems. The research findings provided empirical evidence of varying level of benefits realization amongst two departments within one organization; as one department didn't engage in the organizational changes.

8.3.3. CONTRIBUTION 3: BENEFITS REALIZATION THROUGH CUSTOMIZATION

As highlighted in chapter 2, organizations will customize their ERP systems due to ever changing business requirements (Brehm et al., 2001; Holland et al., 1999; Gupta et al., 2004;

Light, 2005; Rothenberger et al., 2009; Soh and Sia, 2004; Kholeif et al., 2007). Additionally, existing studies on customization suggest a relationship between customization and benefits (Light, 2005). However, these studies don't take into account the relation between customization types and the benefit types (Chou & Chang, 2008; Gattiker & Goodhue, 2005; Light, 2001).

The findings from three case studies confirm that it is unlikely, for organizations, to have a completely un-customized system due to their very different organizational requirements. These findings also corroborate the results from phase 1 that having a 'vanilla' system is more of an 'aspiration', than it is a reality. Additionally, findings from the exploratory research hinted at how different types of customizations could lead to realization of different types of benefits, many of which are deemed crucial for organizations. The findings from three case studies enhanced this understanding about the relationship between customization and the benefits.

Upon closer inspection of the findings, a few important patterns started to emerge from the customization examples. Table 8.2 illustrates these patterns i.e. different types of benefits generated through different types of customizations. First of all, the majority of the customizations to ERP systems were enacted through 'user-exits', which enabled the organizations to achieve a wide variety of additional benefits. However, the findings reveal that user-exits didn't lead to the strategic and IT infrastructure benefits. Similarly, as highlighted in table 8.2, the findings highlight that the organizations were able to achieve managerial and organizational benefits through 'bolt-ons'. For example, one organization (WaterCo) was able to gain operational benefits through the development of reports and interfaces. The findings also indicate that three case study organizations didn't achieve any

strategic or IT infrastructure benefits through any type of customizations. It is interesting to note, that there was no evidence of any case study organisation attempting to customize its package directly through code modifications.

Another important contribution that emerged from this study is a distinct pattern of customizations. More specifically, some customizations undertaken to address the missing functionality within the implemented solutions might not generate any significant benefits. For example, EnergyCo did composite developments were done for data exchanges with industry and pre-payment meter management; but these developments didn't generate any notable benefits. However, some customizations are done to correct missing functionality but, in so doing, might generate benefits as well. For example, in WaterCo, both, Click and Tallyman were added to complement the missing functionalities but generated a number of important benefits. These included improved decision making whilst scheduling operations and improved debt recovery, respectively. Finally, some customizations are undertaken solely with the aim of realising additional benefits. For example, in ManuCo, Repairs did an enhancement to remove the geographical ownership of the engines. This enabled organization to transfer the engines from one place to another.

To summarise, the key contribution to emerge from this element of the study is the insight that customisations have a vital role to play in leveraging the realisation of a very wide variety of benefits in the post-implementation and operational stages, of an ERP project.

Table 8.2: Benefits through Customization in EnergyCo, WaterCo and ManuCo

Organisation	Customization Type	Customization Description	Benefit Type	Benefit Description
EnergyCo	<ul style="list-style-type: none"> Bolt-on 	<ul style="list-style-type: none"> Integration of Tallyman with the ERP package 	<ul style="list-style-type: none"> Managerial 	<ul style="list-style-type: none"> Improved Debt Recovery
	<ul style="list-style-type: none"> User-exit 	<ul style="list-style-type: none"> Enhancement of the ERP package 	<ul style="list-style-type: none"> Managerial 	<ul style="list-style-type: none"> Ability to restrict access to different sales channels
	<ul style="list-style-type: none"> User-exit 	<ul style="list-style-type: none"> Enhancement of the ERP package 	<ul style="list-style-type: none"> Organisational 	<ul style="list-style-type: none"> Ability to provide discounts at different points in time
WaterCo	<ul style="list-style-type: none"> Bolt-on 	<ul style="list-style-type: none"> Integration of Click with the ERP package 	<ul style="list-style-type: none"> Managerial 	<ul style="list-style-type: none"> Improved decision making
	<ul style="list-style-type: none"> Bolt-on 	<ul style="list-style-type: none"> Integration of Tallyman with the ERP package 	<ul style="list-style-type: none"> Managerial 	<ul style="list-style-type: none"> Improved debt recovery
	<ul style="list-style-type: none"> Bolt-on 	<ul style="list-style-type: none"> Integration of GIS with the ERP package 	<ul style="list-style-type: none"> Organisational 	<ul style="list-style-type: none"> Finding the exact location of the job
	<ul style="list-style-type: none"> Bolt-on 	<ul style="list-style-type: none"> Integration of DMS with the ERP package 	<ul style="list-style-type: none"> Organisational 	<ul style="list-style-type: none"> Ability to see the related documents

Organisation	Customization Type	Customization Description	Benefit Type	Benefit Description
WaterCo	<ul style="list-style-type: none"> • User-exit • User-exit • User-exit • Interfaces • Interfaces • Reports 	<ul style="list-style-type: none"> • Enhancement of the ERP package • Enhancement of the ERP package • Enhancement of the ERP package • Development of Interfaces • Development of Interfaces • Development of Reports 	<ul style="list-style-type: none"> • Operational • Operational • Organisational • Operational • Operational • Operational 	<ul style="list-style-type: none"> • Paper less direct debit • Ability to retain customers' history • Recovery of unpaid VAT from HMRC • Easy to use system for field engineers • Reduction in call handling times • Improved billing quality
ManuCo	<ul style="list-style-type: none"> • User-exit 	<ul style="list-style-type: none"> • Enhancement of the ERP package 	<ul style="list-style-type: none"> • Operation 	<ul style="list-style-type: none"> • Removing the geographical ownership of engines
ManuCo	<ul style="list-style-type: none"> • Bolt-on 	<ul style="list-style-type: none"> • Integration of Business Warehouse with the ERP package 	<ul style="list-style-type: none"> • Organisational 	<ul style="list-style-type: none"> • Improved management reporting

8.3.4. CONTRIBUTION 4: EMERGENT BENEFITS

The majority of existing study's in this domain have focused upon the on-time and within budget implementation of IT systems (Nelson, 2005; Sauer and Davis, 2010; Doherty et al., 2012), rather than studying information systems throughout their operational life. This is also true with respect to ERP systems, where the majority of research has focussed upon issues relating to the implementation of ERP systems (Schlichter and Kraemmergaard, 2010).

However, the findings from exploratory research indicated that there is plenty to interest the researcher in the post implementation stages of an ERP project, as it is not, always, possible for organizations to plan all the benefits at the outset of ERP development projects. Indeed, the results from this study confirm prior work indicating that organizations can identify the additional un-planned benefits during the use of the system (Orlikowski, 1996; Lyytinen and Newman, 2008), but in the very particular context of ERP projects. However, the research findings from phase 2 also suggest that the organizations that adopt benefits management approaches have a far higher chance of realizing emergent benefits, than the ones that don't. For example, it is evident from the results that EnergyCo was more successful than ManuCo and WaterCo in realizing emergent benefits because of the explicit adoption of a benefits management approach.

8.3.5. CONTRIBUTION 5: ORGANIZATIONAL INHIBITORS

It appears from the findings of both phases 1 and 2 that the organizational inhibitors can arise in a wide variety of forms, including power, politics, user resistance, inadequate training, people not familiar with the technology and wrong perceptions about the project.

Whilst these findings may resonate with those from a wide variety of information systems and change management studies (Ignatiadis et al., 2009; Boersma et al., 2005; Yeow et al., 2008; Boudreau et al., 2005; Alvarez, 2008; Vasconcelos et al., 2005; Thomas & Hardy, 2011; Klein, 1976; Thomas et al., 2011), the findings with respect to the timings of these inhibitors, and their relationship with the realisation of benefits, provide a number of important new contributions to the literature. Indeed, it is evident from all three case study findings that one of the most important reasons that were successful in instigating organizational changes, and realising benefits, was that they all attempted to identify and address any inhibitors head-on. Indeed, where possible, the case study organizations took special measures to resolve the issues before they arose. For example, the ManuCo introduced the idea of 'commitment acceptance'. This was an effort to step change the culture of ManuCo. As part of commitment acceptance, the employees were trained and educated to instil a behavioural change. Its purpose was that in the new structure, rather than imposing a decision, the managers would have a rational discussion with the employees about a particular situation and then take the decision. This was extremely important for the organization to maximize the efficiencies in the newly implemented organizational structure. Consequently, it is evident that shared responsibility and user involvement are also keys to resolve the organizational inhibitors (Nah et al., 2003). This would result in the maximum 'buy-in' of the project and to get successful results from the project.

Thus, with respect to organizational inhibitors, the findings indicate that organizational inhibitors can occur at various stages of the system life-cycle i.e. pre-implementation and post-implementation of the system development projects. Moreover, this study makes an important new contribution to the literature, by demonstrating the importance of tackling

any organizational inhibitors in order to realize maximum benefits. Also, as discussed in previous section, business changes are the corner-stone in benefits management approaches. Thus, when adopting benefits management approaches and conducting the business changes, the organizations need to consider how any organizational inhibitors can be addressed concurrently. Failure to do so can seriously reduce the chances of getting the maximum benefits from system development projects.

8.3.6. CONTRIBUTION 6: EVALUATION OF ERP SYSTEMS

As highlighted in chapter 2, there are numerous studies that have attempted to evaluate the benefits from system development projects. However, existing studies tend to focus upon the measurement of benefits through financial means, an approach which does not typically reveal the full picture of the variability in benefits realization (Henedricks et al., 2007; Chen et al., 2009; Madapusi et al., 2010). To address this issue, in this project, the Cranfield Process Model BDN (Ward et al., 1996) was chosen, as an analytical tool, as it can cope with both financial and non-financial benefits. Moreover, the BDN was modified and enhanced, based on the findings of Phase 1, so that it could be applied as a diagnostic tool to arrange and analyse the findings from the three case studies. It was envisaged that this would not only help in studying the benefits that organizations were able to achieve through their implemented solutions; but it would also be useful to explore the process of how benefits were actually realised, in these organizations. Consequently, this proved to be valuable in diagnosing why some projects were successful in delivering the benefit, whilst others are not (Ward et al., 1996). In particular, the revised BDN [RBDN], was used to explore, which business changes were necessary, how a particular business change led to a certain benefit,

how were organizational issues handled to achieve maximum benefits and where customizations were necessary/required to get the benefits etc. Thus, the RBDN provides a very useful tool for evaluating benefits, as well as for planning them, as it can be used to explore not just the resultant benefits of ERP, but the chain of events [the '*pathway*'], upon which any achieved benefit was ultimately dependent. These pathways can help to highlight the interactions and dependencies that have vital implications for the process of benefits realization. The following examples provide useful illustrations of the types of pathway that were ultimately identified from each case study organization:

In WaterCo, the mobile solutions (IS/IT Enablers) were instrumental in reducing fuel costs, enhancing customer experience, prioritizing the jobs and continuous synchronization with the server (Planned Benefits) and satisfying the OfWat's regulations (Investment Objectives). However, the organization faced number of issues to realize these benefits. The introduction of technology created the perceptions amongst engineers that technology was now controlling their lives. This happened as field engineers were not able to decide now about the sequence of their jobs (Organizational Inhibitors). To address this issue, the organization spent huge amount of time and money to address this cultural change and to provide the training for the use of mobile solution (Enabling Changes). Also, in order to realize the benefits, the organization changed number of processes. These included engineers using technologically rich tablet PCs to check and complete the jobs assigned to them, changes in working patterns and engineers working from home (Business Changes). Additionally, a number of screens were developed for mobile solution (System Customizations) to make it more user friendly for the use of engineers.

In EnergyCo, consolidation of different activities to reduce waste (Enabling Change) led to a number of benefits. For example, the organization was able to achieve increased customer satisfaction (Planned Benefit) after changing to the first contact resolution (Business Change). Improved customer satisfaction will ultimately help organization to improve its positioning in relation to its competitors (Investment Objective). Consolidation also led to the automation of pre-payment, information and billing systems (Business Changes). However, to enable the automation of pre-payment systems (IS/IT Enablers), the organization had to build an enhancement in the SAP solution (System Customization).

In ManuCo, as highlighted by informants, the use of an integrated system (Business Changes) resulted in improved relationships with customers (Planned Benefits). The enhanced relationships with customers were pivotal in enhancing the organization's ability to win new business. An integrated system was, thus, instrumental in enabling the future growth (Investment Objectives). The staff was also given the necessary training about the use of the system (Enabling Changes). The use of an integrated system (Business Change) also generated the number of other key benefits. These included visibility of information and ability to transfer engines geographically (Planned Benefits). However, to be able to transfer engines geographically, the organization had to do an enhancement in the ERP package (System Customization). Ultimately, it enabled organization to be able to communicate with its international partners (Investment Objectives).

It is evident from the research findings that the process of managing the benefits realization is a complex and potentially daunting process. The findings highlight that benefits realization may not only be dependent on the enactment of organizational changes, as

organizations might also have to customize their solutions and counter a range of inhibitors, before the actual benefits are ultimately realised.

Thus, with respect to evaluation of ERP systems, this study contributes by highlighting that the RBDN can be a very useful tool for retrospectively evaluating the benefits of an ERP implementation; if an organisation has a more realistic and meaningful plan of what it is expecting to achieve, then it should be easier to retrospectively evaluate whether the benefits have been achieved. Another important contribution emerging from this study is that the RBDN has the potential to be a very useful tool of organizational learning. If organisations can clearly articulate the 'pathways' that led to the realisation of benefits, they should develop a far clearer understanding of how further 'emergent' benefits might be achieved on the current ERP project, and how benefits might be achieved on any future IT project.

This section detailed the key contributions of this research project. The next section summarizes and presents the conclusions from this research.

8.4. SUMMARY AND CONCLUSIONS

As highlighted in chapter 2, the motivation of this research study is to generate important, new insights that can help IT practitioners to improve their chances of realising benefits from ERP systems. It has been long argued that one of the most reliable ways to improve the chances of benefits realization is through the adoption of explicit and pro-active BM approaches (Peppard et al., 2007). Yet many organizations, in practice, tend to ignore this advice, as there is little evidence of the widespread adoption of these approaches (Ashurst

et al., 2008). The findings from the first phase of study have highlighted that practitioners don't generally apply BM approaches because of the difficulty of using these approaches in the complex ERP projects. This study has made an effort to improve this situation, by modifying one of the primary BM approaches - namely, the *Benefits Dependency Network* (Ward et al., 1996) - so that it can be rather more readily utilized in the context of complex ERP projects. The modifications to the BDN have been undertaken in light of the new insights that were derived from the results of phase 1, of this study. The findings from phase 1 have highlighted that certain organizational inhibitors can arise during the system implementation projects. It is very important to control and resolve these inhibitors so that the maximum potential of the projects can be achieved. The results from phase 1 have also highlighted that it would be very difficult for organizations to plan all the benefits in the initial phases of any ERP implementation project. Consequently, the findings have suggested that organizations should aim to realize emergent benefits, over the working lives of their ERP implementations, as well as delivering a variety of pre-planned benefits. Additionally, the findings from phase 1 have also highlighted an important new link between ERP customization and the realization of resultant benefits. Although, these three issues (organizational inhibitors, emergent benefits and customization) have been discussed widely in the academic literature, they have not been studied in the very specific context of benefits management approaches (Orlikowski, 1996; Lyytinen and Newman, 2008; Ignatiadis et al., 2009; Boersma et al., 2005; Yeow et al., 2008; Boudreau et al., 2005; Alvarez, 2008; Vasconcelos et al., 2005; Light, 2005).

The findings of this study have indicated a very strong connection between the consideration of these three issues and the realisation of benefits. However, it is unlikely

that these issues - inhibitors, emergent benefits and customisation – will be adequately addressed unless they are explicitly catered for in future BM approaches. For example, it should be through the adoption of well-designed BM approaches that organizations will be able to attain a variety of emergent benefits through a process of continuous reflection and improvement. Similarly, failure to resolve organizational inhibitors can pose difficulties for conducting the organizational changes; and this should therefore be a core element of the BM approaches. Finally, because customization happens on such a large scale, in ERP projects, it needs to be managed proactively within BM approaches.

Against this backdrop, these three elements were added to the BDN, and it is envisaged that, by so doing, it would make the BDN a far more useful tool for the practitioners. Further, the addition of three extra elements should enable organizations to plan for and manage the realisation of benefits from their ERP projects in a far more complete and comprehensive manner.

The findings from phase 1 have also confirmed that it is almost impossible to implement a complete standard system. Whilst it has long been recognised that organizations might need to modify their ERP packages for several reasons (Light, 2005), these findings have highlighted the impact that the type of customization can have on the type of benefits, ultimately realised. Previous studies didn't take into account this relationship when exploring the benefits realized through customizations ((Chou & Chang, 2008; Gattiker & Goodhue, 2005; Light, 2001).

Existing studies have evaluated the benefits of ERP systems through analytical means (Velcu , 2010; Annamalai et al., 2011), but these studies don't explain various elements that need to be carefully co-ordinated and interconnected, to ultimately realise significant business

benefits. In the phase 2 of this research, this issue has been addressed by using RBDN as an interpretative evaluation tool. The RBDN was designed to help arrange and analyse the findings from three case study organizations. Using the RBDN as an interpretive evaluation tool not only helped to appraise the benefits gained but also the process of gaining those benefits. Further, the use of the RBDN was instrumental in studying and analysing the interactions between different activities in the three case studies. It was also instrumental for investigating the following in each of the three case studies: what worked, what didn't, what was different (compared to other cases), what emerged over the course of the project and what were the inconsistencies (compared to other cases).

There have been very few studies investigating what organizations are doing to manage the benefits from their ERP systems (Doherty et al., 2012). Phase 2 of this research has attempted to address this issue. The research findings from phase 2 confirm that the majority of the organizations are not following BM approaches (Ashurst et al., 2008).

Amongst the three case studies conducted, only one organization, EnergyCo, adopted and followed a BM approach. Because of the limited available BM approaches, the EnergyCo developed its own BM approach. This approach was developed based on the local practices of EnergyCo. Having its own approach enabled the EnergyCo to have the flexibility to manage the process of benefits realization (Doherty et al., 2012). Organizational changes are the corner-stone of any BM approach. Without organizational changes, the organizations will have limited chances of attaining the benefits through the implementation of the IT solutions (Marchand and Peppard, 2008). The research findings, both from phase 1 and phase 2, confirm the significance of the organizational changes. It is evident from the findings of phase 2 that all three case study organizations realized, with

varying level of success, a number of important benefits. The key step for getting those benefits was the structural changes in all three organizations. The findings also provide the contrasting experience of two departments within one organization. In WaterCo, the operations management department went through major process changes; whereas the billing department engaged in minimum changes. This resulted in operations department getting more benefits than the billing department. Thus, this contrasting experience further highlights that importance of the organizational changes alongside the implementation of an ERP system. However, the findings from phase 1 highlighted that organizational inhibitors can cause serious problems to conduct the organizational changes during the system development projects. It is very important to tackle these problems to successfully engage in the organizational changes (Nah et al., 2003). The results from phase 2 corroborate the findings of phase 1. All three case study organizations faced numerous organizational inhibitors such as people not familiar with the technology, wrong perception about the project and managers feeling loss of power etc. However all three cases, with varying level of success, tackled these issues and were able to implement the organizational changes. Further, the findings from three cases reveal that inhibitors can arise after the implementation of the project as well. Therefore, organizations need to keep a detailed eye on these issues so that they don't derail the chances of getting maximum benefits at any stage of the life-cycle of ERP systems.

Although, organizations should plan for benefits at the outset of system development projects but it is difficult to detail all the benefits before the start of the project. The results from phase 1 highlighted that organizations can achieve un-planned benefits during the use of the system. These results were confirmed from the findings of three cases. All three cases,

with varying level of success, realized emergent benefits during the use of the system. However, EnergyCo was most successful in realizing the emergent benefits because of its explicit focus on benefits. This was made possible through the adoption of a locally developed BM approach. It is through the adoption of BM approaches that organizations will continuously look to innovate either their processes or the systems to realize the identified opportunities. The findings from phase 2 also corroborated the results of the phase 1 with respect to the customizations i.e. it is impossible to install a completely standard system. The three case study organizations did a number of customizations to their ERP packages. Some of these customizations were done to fill the missing functionality and others were done to achieve a benefit. Thus, findings from phase 2 also confirm the link between customization and the benefits (Light, 2005). Further, the findings from phase 2 highlight the relationship between various types of customizations and the benefits. For example, organizations can achieve operational benefits through the development of reports and interfaces.

To conclude, it is evident from the academic literature and the research findings that benefits realization from system development projects does rely heavily on organizational changes. Organizations will be in a better position of getting the benefits if they do things differently with the help of complimentary technology. However, the findings also show that it is, sometimes, impossible to realize a benefit without doing the customization. The research findings highlight numerous examples where participants have to customize the system to get the benefits. There are several other examples which highlight that to get a benefit; the organization performed both the organizational changes and the customization of the ERP system. Because customization happens at a large scale, this implies that benefits

realization from ERP systems may not be dependent on organizational changes only these days. In fact, it's through the combination of organizational changes and customization which helps the organization to exploit the maximum potential of the ERP systems.

8.5. MANAGERIAL IMPLICATIONS

In addition to delivering several important new contributions to the ERP and benefits realisation literatures, the findings of this study have a number of important implications for ERP practitioners and the organizations implementing and managing ERP systems. More specifically, the following is a list these implications:

- The results from this study have confirmed the importance of BM approaches. Managers should adopt BM approaches for their ERP projects as it should help to counter the limited variety of benefits generally realized from ERP implementations.
- This study has attempted to refine an existing BM approach, i.e. BDN. Although, further studies are required to further enhance and validate it, it is envisaged that the adoption of RBDN might provide a rather more comprehensive, and better tailored tool to help practitioners manage the realisation of benefits from their ERP systems.
- As there are very few existing BM approaches, the results of this study have confirmed that the organizations can develop their own localized BM approaches. These approaches can be developed based on the local practices and context. The adoption of localized approaches can provide organizations the flexibility to manage the process of benefits management.

- The results of this study emphasize the importance of organizational changes to realize crucial benefits. ERP managers and organizations should extensively engage in the process of business changes to get the maximum benefits from their ERP investments.
- Managers need to be aware that they can't typically plan all the benefits, of an ERP application, in advance. Consequently, as part of any BM approach, they should continuously be looking for potential opportunities to exploit, and problems to address, throughout the life cycle of the system. Practitioners can then take step to appropriately address any such problems or opportunities, by either making appropriate changes to design of their business processes or by enhancing the functionality of their technology.
- The results of the study also confirm that the customizations of ERP systems are necessary and can help to realize planned or emergent benefits. Managers can select a specific type of customization to get a particular benefit.

8.6. LIMITATIONS AND OPPORTUNITIES FOR FUTURE RESEARCH

Inevitably, as with any research project, there are a number of limitations in the conduct and the output of this PhD project (Mullins and Kiley, 2002). In phase 1 of this research, all the respondents in the vendor's category were from one organization. Although, having all respondents from one organization was useful in getting a consistent view; it would be helpful if future studies could canvas the opinions of a wider range of vendors, to get a more balanced viewpoint. Further, although the study conducted 22 interviews in phase 1, the number of respondents from vendors and systems integrators' category was relatively small,

compared to the respondents from the client organizations. Therefore, the findings may not depict a well-balanced representation of the ERP industry. Thus, future research should take this issue into consideration as well when trying to elicit the viewpoint of key stakeholders from the ERP industry.

This research has attempted to understand and explore the process of benefits realization from the perspectives of vendors, consultants and the client organizations. Based on the feedback from members of these three key stakeholder groups, within the ERP industry, this study has attempted to modify the BDN, an existing BM approach, to make it more applicable in the system development projects. However, it has not been possible to fully test the revised BDN through a long-term, direct action research project, embedded within an organization actually implementing ERP. Future studies testing the conclusions from phase 1 will help significantly to incorporate the BM approaches in the system development projects. This, in turn, will help to improve the likelihood of maximum benefits realization.

A further limitation of this study is with regard to the number of case studies. This research study comprised the findings from just three case studies organisations. These case studies were selected to investigate the process of benefits realization from their ERP investments. In all three organizations, respondents from different areas were selected to obtain their views about the research issues on hand. However, a small number of informants may not have provided the representative view of all staff within their perspective areas. Future studies can improve these shortcomings in a number of ways. First of all, more cases can be included in the research. Secondly, future studies need to involve more staff from more functional areas. This will help to understand the process of benefits management, from different perspectives, in the ERP life cycle.

The study has attempted to establish a connection between types of customizations and the resultant benefits. However, some of these connections have been established based on very few examples. Future studies can further investigate these connections by exploring the examples of customizations done purely from the benefits perspective.

The final limitation of this study relates to geographical coverage of the case studies, in that all three organizations were based in the UK. Moreover, amongst them, two are from the utility sector and the one is from the manufacturing sector. Therefore, when it comes to the implications of this study for the wider practice of benefits management, any generalizations have to consider the impact of the particular industry. Further, the case studies have managed their projects in different time periods. This implies that the key stakeholders from three case study organisations might had different perceptions about the benefits and the process of benefits realisation. Consequently, further research should not only look for additional case studies and additional industries, but also for projects conducted in same time periods to increase comparability between the projects.

REFERENCES

- Al-Mudimigh, Abdullah, Mohamed Zairi, and Majed Al-Mashari. "ERP software implementation: an integrative framework." *European Journal of Information Systems* 10.4 (2001): 216-226.
- Alvarez, Rosio. "Examining technology, structure and identity during an Enterprise System implementation." *Information Systems Journal* 18.2 (2008): 203-224.
- Annamalai, C., and T. Ramayah. "Enterprise resource planning (ERP) benefits survey of Indian manufacturing firms: An empirical analysis of SAP versus Oracle package." *Business Process Management Journal* 17.3 (2011): 495-509.
- Ashurst, Colin, Neil F. Doherty, and Joe Peppard. "Improving the impact of IT development projects: the benefits realization capability model." *European Journal of Information Systems* 17.4 (2008): 352-370.
- Barker, Traci, and Mark N. Frolick. "ERP implementation failure: A case study." *Information Systems Management* 20.4 (2003): 43-49.
- Barzelay, Michael. "Learning from Second-Hand Experience: Methodology for Extrapolation-Oriented Case Research." *Governance* 20.3 (2007): 521-543.
- BCS (British Computer Society). *Challenge of Complex IT Projects*, London: BCS, 2004.
- Deloitte, C., and G. Touche. "ERP's Second Wave: Maximizing the Value of ERP-Enabled Processes." (1998): 1-892383.
- Bendoly, Elliot, and Tobias Schoenherr. "ERP system and implementation-process benefits: implications for B2B e-procurement." *International Journal of Operations & Production Management* 25.4 (2005): 304-319.
- Berg, Bruce Lawrence. *Qualitative research methods for the social sciences*. 5th Edition. Boston: Pearson, 2004.
- Bernstein, Richard J. *The restructuring of social and political theory*. University of Pennsylvania Press, 1978.
- Bernstein, Richard J. *The restructuring of social and political theory*. Harcourt Brace, 1976.
- Boersma, Kees, and Sytze Kingma. "From means to ends: the transformation of ERP in a manufacturing company." *The Journal of Strategic Information Systems* 14.2 (2005): 197-219.
- Boudreau, Marie-Claude, and Daniel Robey. "Enacting integrated information technology: A human agency perspective." *Organization science* 16.1 (2005): 3-18.

Braun, Jessica, Frederik Ahlemann, and Gerold Riempp. "Benefits Management-A Literature Review and Elements of a Research Agenda." *Wirtschaftsinformatik (1)*. 2009.

Breakwell, Glynis M. *Interviewing*. Taylor & Frances/Routledge, 1990.

Brehm, Lars, Armin Heinzl, and M. Lynne Markus. "Tailoring ERP systems: a spectrum of choices and their implications." *System Sciences, 2001. Proceedings of the 34th Annual Hawaii International Conference on*. IEEE, 2001.

Brynjolfsson, Erik, and Lorin M. Hitt. "Computing productivity: Firm-level evidence." *Review of economics and statistics* 85.4 (2003): 793-808.

Bryman, Alan. *Social research methods*. Oxford university press, 2012.

Bryman, A., Bell, E. *Business Research Methods*, Hampshire: Oxford University Press, 2003.

Burrell, G., Morgan, G. *Sociological Paradigms and Organizational Analysis: Elements of Sociology in Corporate Life*, Heinemann Educational Books, USA, 1979.

Burton, Dawn, ed. *Research training for social scientists: a handbook for postgraduate researchers*. Sage, 2000.

Cassell, Catherine, and Gillian Symon, eds. *Essential guide to qualitative methods in organizational research*. Sage, 2004.

CBR Staff Write. (2011). ERP market to grow to \$50.3bn in 2015: Forrester. CBR Computer Business Review. (Online) Available at: <http://enterpriseapplications.cbronline.com/news/erp-market-to-grow-to-503bn-in-2015-forrester-060511>. Accessed 16/11/2011

Changchit, Chuleeporn, Kshiti D. Joshi, and Albert L. Lederer. "Process and reality in information systems benefit analysis." *Information Systems Journal* 8.2 (1998): 145-162.

CHEN, Songsheng, and Lingbing LIU. "Research on Economic Benefit from Y Software Company's ERP Users." *Journal of Service Science and Management* 2.3 (2009): 161-167.

Chou, Shih-Wei, and Yu-Chieh Chang. "The implementation factors that influence the ERP (enterprise resource planning) benefits." *Decision Support Systems* 46.1 (2008): 149-157.

Chua, Wai Fong. "Radical Developments in Accounting Thought", *The Accounting Review*, 61 (1986), 601-632.

Clegg, Chris W. "Sociotechnical principles for system design." *Applied ergonomics* 31.5 (2000): 463-477.

Clegg, Chris, et al. "Information technology: a study of performance and the role of human and organizational factors." *Ergonomics* 40.9 (1997): 851-871.

Creswell, J. *Research design: Qualitative and quantitative approaches*, London: Sage, 1994.

Davenport, Thomas H. "Putting the enterprise into the enterprise system." *Harvard business review* 76.4 (1998): 121-131.

Davenport, Thomas H., Jeanne G. Harris, and Susan Cantrell. "The return of enterprise solutions: The director's cut." *Accenture Institute for Strategic Change Research Report 14* (2002).

Carr, David F. "Hershey's sweet victory." *Baseline Magazine, The Project Management Center* (2002).

DeLone, William H. "The DeLone and McLean model of information systems success: a ten-year update." *Journal of management information systems* 19.4 (2003): 9-30.

DeLone, William H., and Ephraim R. McLean. "Information systems success: the quest for the dependent variable." *Information systems research* 3.1 (1992): 60-95.

Denzin, N. K. and Lincoln, Y. S. *The Landscape of Qualitative Research*. 3rd Edition, Sage Publications Inc., 2008

Doherty, Neil F. "The role of socio-technical principles in leveraging meaningful benefits from IT investments." *Applied ergonomics* 45.2 (2014): 181-187.

Doherty, Neil F., and Malcolm King. "The consideration of organizational issues during the systems development process: an empirical analysis." *Behaviour & Information Technology* 17.1 (1998): 41-51.

Doherty, Neil F., Malcolm King, and Omar Al-Mushayt. "The impact of inadequacies in the treatment of organizational issues on information systems development projects." *Information & Management* 41.1 (2003): 49-62.

Doherty, Neil F., Colin Ashurst, and Joe Peppard. "Factors affecting the successful realisation of benefits from systems development projects: findings from three case studies." *Journal of Information Technology* 27.1 (2012): 1-16.

Dos Santos, Brian, and Lyle Sussman. "Improving the return on IT investment: the productivity paradox." *International journal of information management* 20.6 (2000): 429-440.

Eason, Ken. "Changing perspectives on the organizational consequences of information technology." *Behaviour & information technology* 20.5 (2001): 323-328.

eds Currie, Wand Galliers, B. OXFORD University Press

Eisenhardt, Kathleen M. "Building theories from case study research." *Academy of management review* 14.4 (1989): 532-550.

Esteves, José. "A benefits realisation road-map framework for ERP usage in small and medium-sized enterprises." *Journal of Enterprise Information Management* 22.1/2 (2009): 25-35.

Fink, Arlene. *The survey handbook*. Thousand Oaks, CA: Sage, 2003.

Finney, Sherry, and Martin Corbett. "ERP implementation: a compilation and analysis of critical success factors." *Business Process Management Journal* 13.3 (2007): 329-347.

Fischer, By Frank. "Postpositivism: the critique of empiricism." *Policy Studies Journal* 26.1 (1998): 129-146.

Fortune, Joyce, and Geoff Peters. *Information systems: Achieving success by avoiding failure*. John Wiley & Sons, 2005.

Fui-Hoon Nah, Fiona, Kathryn M. Zuckweiler, and Janet Lee-Shang Lau. "ERP implementation: chief information officers' perceptions of critical success factors." *International Journal of Human-Computer Interaction* 16.1 (2003): 5-22.

Gall, J.P., Gall, M.D. and Borg, W. R. *Applying educational research: A practical guide*. New York, Longman Publishing Group. 1999.

Gargeya, Vidyaranya B., and Cydnee Brady. "Success and failure factors of adopting SAP in ERP system implementation." *Business Process Management Journal* 11.5 (2005): 501-516.

Gattiker, Thomas F., and Dale L. Goodhue. "What happens after ERP implementation: understanding the impact of interdependence and differentiation on plant-level outcomes." *MIS quarterly* (2005): 559-585.

Golland, M. L. "BUYING OR MAKING SOFTWARE PACKAGE THAT IS BEST FOR YOU." *Journal of Systems Management* 29.8 (1978): 48-51.

Greenwood, Royston, and Christopher R. Hinings. "Understanding radical organizational change: Bringing together the old and the new institutionalism." *Academy of management review* 21.4 (1996): 1022-1054.

Gefen, David. "Nurturing clients' trust to encourage engagement success during the customization of ERP systems." *Omega* 30.4 (2002): 287-299.

Grossman, Theodore, and James Walsh. "Avoiding the pitfalls of ERP system implementation." *Information Systems Management* 21.2 (2004): 38-42.

Gupta, Omprakash, et al. "Enterprise resource planning: a case of a blood bank." *Industrial Management & Data Systems* 104.7 (2004): 589-603.

Harris, R., 2000. Customization versus Standardization: Striking a balance in ERP software. [Online] Available at: <http://machinedesign.com/article/customization-versus-standardization-striking-a-balance-in-erp-software-0720>. Accessed on 09/06/2011

Hawking, Paul, Andrew Stein, and Susan Foster. "Revisiting ERP systems: benefit realization." *System Sciences, 2004. Proceedings of the 37th Annual Hawaii International Conference on*. IEEE, 2004.

Helo, Petri, Pornthep Anussornnitisarn, and Kongkiti Phusavat. "Expectation and reality in ERP implementation: consultant and solution provider perspective." *Industrial Management & Data Systems* 108.8 (2008): 1045-1059.

Hendricks, Kevin B., Vinod R. Singhal, and Jeff K. Stratman. "The impact of enterprise systems on corporate performance: A study of ERP, SCM, and CRM system implementations." *Journal of Operations Management* 25.1 (2007): 65-82.

Holland, C., Ben Light, and Peter Kawalek. "Beyond enterprise resource planning projects: innovative strategies for competitive advantage." Proceedings of the Seventh European Conference on Information Systems, Copenhagen Business School, Copenhagen, Denmark, 1999.

Hughes, Alan, and Michael S. Scott-Morton. "The transforming power of complementary assets." *MIT Sloan Management Review* 47.4 (2006): 50-58.

Hunton, James E., Barbara Lippincott, and Jacqueline L. Reck. "Enterprise resource planning systems: comparing firm performance of adopters and nonadopters." *International Journal of Accounting information systems* 4.3 (2003): 165-184.

Ifinedo, Princely, et al. "Relationships among ERP post-implementation success constructs: An analysis at the organizational level." *Computers in Human Behavior* 26.5 (2010): 1136-1148.

Ignatiadis, Ioannis, and Joe Nandhakumar. "The effect of ERP system workarounds on organizational control." *Scandinavian Journal of Information Systems* 21.2 (2009): 59-90.

Irani, Zahir. "Information systems evaluation: navigating through the problem domain." *Information & Management* 40.1 (2002): 11-24.

Irani, Zahir, and Peter ED Love. "Developing a frame of reference for ex-ante IT/IS investment evaluation." *European Journal of Information Systems* 11.1 (2002): 74-82.

Jacobson, S., Shepherd, J., D'Aquila, M., Carter, K., 2007. The ERP Market Sizing Report:2006–2011, (Online) Available at: http://www.sap.com/solutions/business-suite/erp/pdf/AMR_ERP_Market_Sizing_2006-2011.pdf Accessed on 13/11/10

Jones, S., and J. Hughes. "Understanding IS evaluation as a complex social process: a case study of a UK local authority." *European Journal of Information Systems* 10.4 (2001): 189-203.

Jansen, Harrie. "The Logic of Qualitative Survey Research and its Position in the Field of Social Research Methods." *Forum: Qualitative Social Research*. Vol. 11. No. 2. 2010.

Klein, D. Some notes on the dynamics of resistance to change: The defender role. In W. G. Bennis, K. D. Benne, R. Chin, & K. E. Corey (Eds.), *The planning of change*. New York: Holt, Rinehart and Winston, 1976.

Kale, P. T., S. S. Banwait, and S. C. Laroia. "Performance evaluation of ERP implementation in Indian SMEs." *Journal of Manufacturing Technology Management* 21.6 (2010): 758-780.

Kanaracus, C. (2010). Biggest ERP failures of 2010. ComputerWorld. (Online) Available at: http://www.computerworld.com/s/article/print/9201562/Biggest_ERP_failures_of_2010?taxonomyName=ERP&taxonomyId=121. Accessed 02/11/2010

Kaplan, Bonnie, and Joseph A. Maxwell. "Qualitative research methods for evaluating computer information systems." *Evaluating the Organizational Impact of Healthcare Information Systems*. Springer New York, 2005. 30-55.

Kaplan, Robert S., and David P. Norton. "The balanced scorecard – measures that drive performance". *Harvard Business Review*, 70.1 (1992): 71-79.

Kholeif, Ahmed OR, Magdy Abdel-Kader, and Michael Sherer. "ERP customization failure: Institutionalized accounting practices, power relations and market forces." *Journal of Accounting & Organizational Change* 3.3 (2007): 250-269.

Kwahk, Kee-Young, and Hyunchul Ahn. "Moderating effects of localization differences on ERP use: A socio-technical systems perspective." *Computers in Human Behavior* 26.2 (2010): 186-198.

Lee, Allen S. "Researching MIS." *Rethinking management information systems* (1999): 7-27.

Lee, Nick, and Ian Lings. *Doing business research: a guide to theory and practice*. Sage, 2008.

Leonardi, Paul M. "Activating the informational capabilities of information technology for organizational change." *Organization Science* 18.5 (2007): 813-831.

Leonardi, Paul M., and Stephen R. Barley. "What's under construction here? social action, materiality, and power in constructivist studies of technology and organizing." *The Academy of Management Annals* 4.1 (2010): 1-51.

Levinson, Meridith. "Recession causes rising IT project failure rates." *CIO Magazine* 18 (2009).

- Light, Ben. "Going beyond 'misfit' as a reason for ERP package customisation." *Computers in Industry* 56.6 (2005): 606-619.
- Light, Ben. "The maintenance implications of the customization of ERP software." *Journal of software maintenance and evolution: research and practice* 13.6 (2001): 415-429.
- Lee, Allen S., and Richard L. Baskerville. "Generalizing generalizability in information systems research." *Information systems research* 14.3 (2003): 221-243.
- Lin, Chad, and Graham Pervan. "The practice of IS/IT benefits management in large Australian organizations." *Information & Management* 41.1 (2003): 13-24.
- Luo, Wenhong, and Diane M. Strong. "A framework for evaluating ERP implementation choices." *Engineering Management, IEEE Transactions on* 51.3 (2004): 322-333.
- Lynch, R. K. "Implementing packaged application software: Hidden costs and new challenges." *SYST. OBJECT. SOLUTIONS*. 4.4 (1984): 227-234.
- Markus, M. Lynne. "Technochange management: using IT to drive organizational change." *Journal of Information Technology* 19.1 (2004): 4-20.
- Lyytinen, Kalle, and Mike Newman. "Explaining information systems change: a punctuated socio-technical change model." *European Journal of Information Systems* 17.6 (2008): 589-613.
- Mack, N., Woodsong, C., Macqueen, M.K., Guest, G., Namey, E., "Qualitative Research Methods: A DATA COLLECTOR'S FIELD GUIDE", Family Health International, 2005. Available at:
<http://www.fhi.org/NR/rdonlyres/emgox4xpcovrysqspsgy5ww6mq7v4e44etd6toiejyxlhbm k5sdnef7fqlr3q6hlwa2ttj5524xbrn/datacollectorguideenrh.pdf>, [Accessed at 18/12/2010]
- Madapusi, Arun, and Derrick D'Souza. "The influence of ERP system implementation on the operational performance of an organization." *International Journal of Information Management* 32.1 (2012): 24-34.
- Mandal, Purnendu, and A. Gunasekaran. "Application of SAP R/3 in on-line inventory control." *International Journal of Production Economics* 75.1 (2002): 47-55.
- Marchand, Donald A., and Joe Peppard. "Designed to fail: why it projects underachieve and what to do about it." *Research paper* 11 (2008): 1-28.
- Marchand, Donald A., William J. Kettinger, and John D. Rollins. "Information orientation: people, technology and the bottom line." *Sloan Management Review* 41.4 (2000): 69-80.

Markus, M. Lynne, and Cornelis Tanis. "The enterprise systems experience—from adoption to success." *Framing the domains of IT research: Glimpsing the future through the past* 173 (2000): 207-173.

Markus, M. L., C. Tanis, and R. Zmud. "Framing the Domains of IT Research: Glimpsing the Future Through the Past." *Framing the Domains of IT Research: Glimpsing the Future Through the Past*, RW Zmud (Ed.), Pinnaflex Educational Resources, Inc, Cincinnati, OH (2000): 173-207.

Markus, M. Lynne, Cornelis Tanis, and Paul C. Van Fenema. "Enterprise resource planning: multisite ERP implementations." *Communications of the ACM* 43.4 (2000): 42-46.

Matolcsy, Zoltan P., Peter Booth, and Bernhard Wieder. "Economic benefits of enterprise resource planning systems: some empirical evidence." *Accounting & Finance* 45.3 (2005): 439-456.

Maykut, Pamela, and Richard Morehouse. *Beginning qualitative research: A philosophical and practical guide*. Routledge, 2002.

McAfee, Andrew. "The impact of enterprise information technology adoption on operational performance: an empirical investigation." *Production and operations management* 11.1 (2002): 33-53.

Miles, Matthew B., and A. Michael Huberman. *Qualitative data analysis: An expanded sourcebook*. Sage, 1994.

Mirani, Rajesh, and Albert L. Lederer. "An instrument for assessing the organizational benefits of IS projects." *Decision Sciences* 29.4 (1998): 803-838.

Mullins, Gerry, and Margaret Kiley. "'It's a PhD, not a Nobel Prize': how experienced examiners assess research theses." *Studies in higher education* 27.4 (2002): 369-386.

Myers, Michael. "Investigating information systems with ethnographic research." *Communications of the AIS* 2.4es (1999): 1.

Myers, Michael D. "Qualitative research in information systems." *Management Information Systems Quarterly* 21 (1997): 241-242.

Myers, Michael D. "A disaster for everyone to see: an interpretive analysis of a failed IS project." *Accounting, Management and Information Technologies* 4.4 (1994): 185-201.

Nelson, R. Ryan. "Project retrospectives: Evaluating project success, failure, and everything in between." *MIS Quarterly Executive* 4.3 (2005): 361-372.

Nicolaou, Andreas I. "Quality of post implementation review for enterprise resource planning systems." *International Journal of Accounting Information Systems* 5.1 (2004): 25-49.

Orlikowski, Wanda J., and Jack J. Baroudi. "Studying information technology in organizations: Research approaches and assumptions." *Information systems research* 2.1 (1991): 1-28.

Orlikowski, Wanda J. "Case tools as organizational change: investigating incremental and radical changes in systems development." *MIS quarterly* 17.3 (1993).

Orlikowski, Wanda J. "Improvising organizational transformation over time: A situated change perspective." *Information systems research* 7.1 (1996): 63-92.

Orlikowski, Wanda J. "The duality of technology: Rethinking the concept of technology in organizations." *Organization science* 3.3 (1992): 398-427.

Panorama Consulting. (2011) ERP Report: A Panorama Consulting Group Research Report. Online <http://panorama-consulting.com/Documents/2011-ERP-Report.pdf>. Accessed 25/10/2011

Shanks, Graeme. "A model of ERP project implementation." *Journal of information technology* 15.4 (2000): 289-303.

Peppard, Joe, and John Ward. "Unlocking Sustained Business Value from IT Investments." *California Management Review* 48.1 (2005).

Peppard, Joe, John Ward, and Elizabeth Daniel. "Managing the Realization of Business Benefits from IT Investments." *MIS Quarterly Executive* 6.1 (2007).

Petter, Stacie, William DeLone, and Ephraim R. McLean. "The Past, Present, and Future of "IS Success"." *Journal of the Association for Information Systems* 13.5 (2012).

Poston, Robin, and Severin Grabski. "Financial impacts of enterprise resource planning implementations." *International Journal of Accounting Information Systems* 2.4 (2001): 271-294.

Ptak, Carol A., and Eli Schragenheim. *ERP: tools, techniques, and applications for integrating the supply chain*. CRC Press, 2003.

Rapoport, Robert N. "Three dilemmas in action research with special reference to the Tavistock experience." *Human relations* 23.6 (1970): 499-513.

Remenyi, Dan, Terry White, and Michael Sherwood-Smith. *Achieving maximum value from information systems: a process approach*. John Wiley & Sons, Inc., 1997.

- Robey, Daniel, Jeanne W. Ross, and Marie-Claude Boudreau. "Learning to implement enterprise systems: an exploratory study of the dialectics of change." *Journal of Management Information Systems* 19.1 (2002): 17-46.
- Robey, Michael, Donald Coney, and Rainer A. Sommer. "Contracting for implementation of standard software." *Industrial Management & Data Systems* 106.4 (2006): 562-580.
- Ross, Jeanne W., and Michael R. Vitale. "The ERP revolution: surviving vs. thriving." *Information systems frontiers* 2.2 (2000): 233-241.
- Rothenberger, Marcus A., and Mark Srite. "An investigation of customization in ERP system implementations." *Engineering Management, IEEE Transactions on* 56.4 (2009): 663-676.
- Rubin, Herbert J., and Irene S. Rubin. *Qualitative interviewing: The art of hearing data*. Sage Publications, 2012.
- Sauer, C. and Davis, G.B. *Information Systems Failure*, Encyclopaedia of Library and Information Sciences, Taylor and Francis, New York, 2010.
- Saunders, M., Lewis, P. and Thornhill, P. *Research Methods for Business students*, Prentice Hall, Pearson Education, 1997.
- Schlichter, Bjarne Rerup, and Pernille Kraemmergaard. "A comprehensive literature review of the ERP research field over a decade." *Journal of Enterprise Information Management* 23.4 (2010): 486-520.
- Scott, Judy E. "The FoxMeyer Drugs' bankruptcy: Was it a failure of ERP." *Americas Conference on Information Systems, August*. 1999.
- Seddon, Peter B., Cheryl Calvert, and Song Yang. "A multi-project model of key factors affecting organizational benefits from enterprise systems." *MIS quarterly* 34.2 (2010): 305-328.
- Sedera, Darshana, and Guy G. Gable. "A factor and structural equation analysis of the enterprise systems success measurement model." Association for Information Systems, 2004.
- Seidel, B. "SAPs Data Warehouse wird erwachsen." *ComputerWoche* 16 (2000): 17-18.
- Shang, Shari, and Peter B. Seddon. "A comprehensive framework for classifying the benefits of ERP systems." *Americas Conference on Information Systems*. 2000.
- Shang, Shari, and Peter B. Seddon. "Assessing and managing the benefits of enterprise systems: the business manager's perspective." *Information Systems Journal* 12.4 (2002): 271-299.
- Silverman, D. (2000) *Doing Qualitative Research*. SAGE Publications Ltd.

Soh, Christina, and Siew Kien Sia. "An institutional perspective on sources of ERP package–organisation misalignments." *The Journal of Strategic Information Systems* 13.4 (2004): 375-397.

Staehr, Lorraine, Graeme Shanks, and Peter B. Seddon. "An Explanatory Framework for Achieving Business Benefits from ERP Systems." *Journal of the Association for Information Systems* 13.6 (2012): 2.

Strauss Anselm and Corbin, Juliet. *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Sage, 1998.

Su, Yi-fen, and Chyan Yang. "A structural equation model for analyzing the impact of ERP on SCM." *Expert Systems with Applications* 37.1 (2010): 456-469.

Su, Yi-fen, and Chyan Yang. "Why are enterprise resource planning systems indispensable to supply chain management?" *European Journal of Operational Research* 203.1 (2010): 81-94.

Tesch, R. *Qualitative Research Analysis Types and Software Tools*. Falmer Press, New York, 1990.

Trigg, Roger. *Understanding social science: A philosophical introduction to the social sciences*. Basil Blackwell, 1985.

Turner, G., 2006. Is ERP key to supply chain success? [Online] Available at: <http://appliedclinicaltrialsonline.findpharma.com/appliedclinicaltrials/article/articleDetail.jsp?id=316474>. Accessed on 14/05/13

Thomas, Robyn, and Cynthia Hardy. "Reframing resistance to organizational change." *Scandinavian Journal of Management* 27.3 (2011): 322-331.

Thomas, Robyn, Leisa D. Sargent, and Cynthia Hardy. "Managing organizational change: Negotiating meaning and power-resistance relations." *Organization Science* 22.1 (2011): 22-41.

Uwizeyemungu, Sylvestre, and Louis Raymond. "Linking the effects of ERP to organizational performance: Development and initial validation of an evaluation method." *Information Systems Management* 27.1 (2010): 25-41.

Vasconcelos, Ana C. "The role of professional discourses in the organisational adaptation of information systems." *International journal of information management* 27.4 (2007): 279-293.

Velcu, Oana. "Strategic alignment of ERP implementation stages: An empirical investigation." *Information & Management* 47.3 (2010): 158-166.

Walsham, Geoff. *Interpreting information systems in organizations*. John Wiley & Sons, Inc., 1993.

Wallace, Thomas F., and Michael H. Kremzar. *ERP: making it happen: the implementers' guide to success with enterprise resource planning*. John Wiley & Sons, 2002.

Ward, John, and Elizabeth Daniel. *Benefits management: delivering value from IS and IT investments*. John Wiley & Sons, 2006.

Ward, J. and Elvin, R. (1999) A new framework for managing IT-enabled business change, *Information Systems Journal* 9(3): 197-222.

Ward, J., Taylor, P. and Bond, P. (1996) Evaluation and the realisation of IS/IT benefits, *European Journal of Information Systems* 4: 214-225.

Ward, John, P. Taylor, and P. Bond. "Evaluation and realisation of IS/IT benefits: an empirical study of current practice." *European Journal of Information Systems* 4.4 (1996): 214-225.

Ward, John, Steven De Hertogh, and Stijn Viaene. "Managing benefits from IS/IT investments: An empirical investigation into current practice." *System Sciences, 2007. HICSS 2007. 40th Annual Hawaii International Conference on*. IEEE, 2007.

Wieder, Bernhard, et al. "The impact of ERP systems on firm and business process performance." *Journal of Enterprise Information Management* 19.1 (2006): 13-29.

Yeow, Adrian, and Siew Kien Sia. "Negotiating "best practices" in package software implementation." *Information and Organization* 18.1 (2008): 1-28.

Yin, Robert K. *Case study research: Design and methods*. Vol. 2. Sage, 1994.

APPENDICES

APPENDIX 1: INTERVIEW GUIDE FOR PHASE 1

Background:

1. Can you tell us a bit about your professional back ground?

Benefits Management:

1. Have you heard about the benefits management approaches?
2. To what extent, in your observation, organizations implementing ERP systems follow benefits management approaches?
3. From your experience, what are the potential reasons for not following the benefits management approaches?

Benefits Realization via Business Changes:

1. From your experience, can we focus on one project where you have witnessed organizations achieving the benefits by using ERP systems?
 - What kind of organizational change was necessary to get the benefits from ERP system?
 - What sort of benefits did the organization achieve?
 - How were these benefits identified?

Benefits Realization via Customization:

1. From your experience, why do organizations customize their ERP systems?
2. From your experience, can we focus on one project where you have seen the organization achieving the benefits by using ERP systems?
 - What type of customization was necessary to get the benefits from ERP system?
 - What sort of benefit did the organization achieve?
 - How was this benefit identified?

Closing:

1. Would you like to add anything to the discussion we have done?
2. Would it be OK to contact you again if I need any clarifications (Preferably through email or phone)?

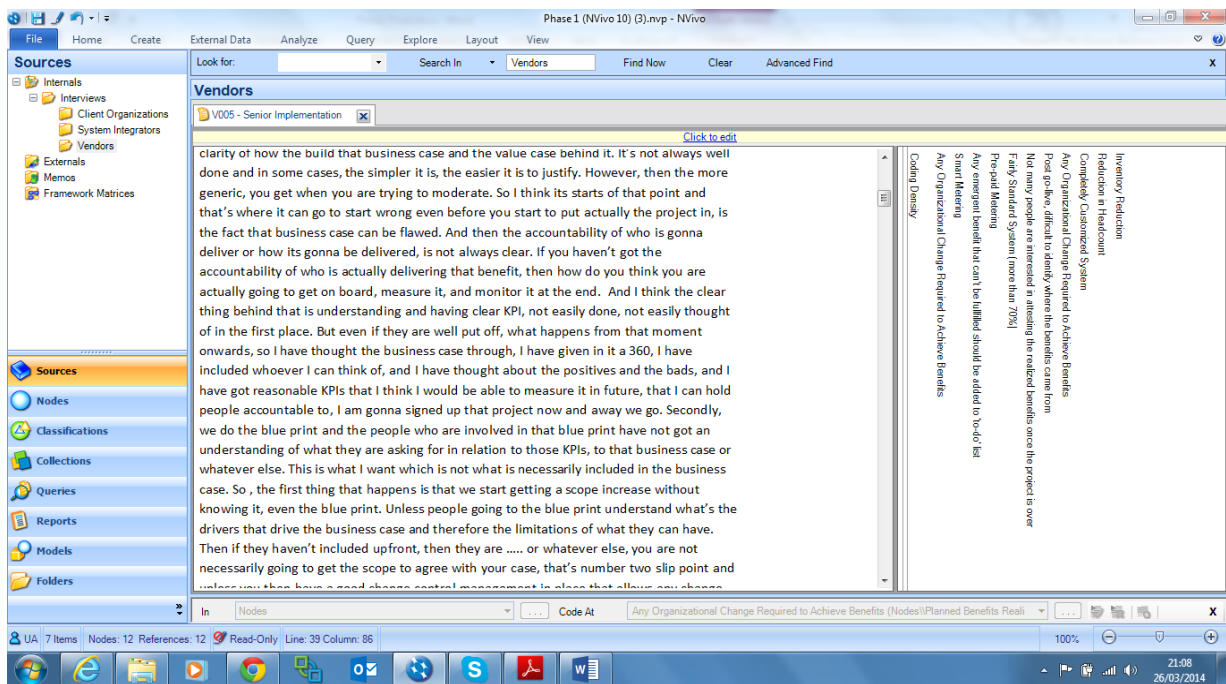
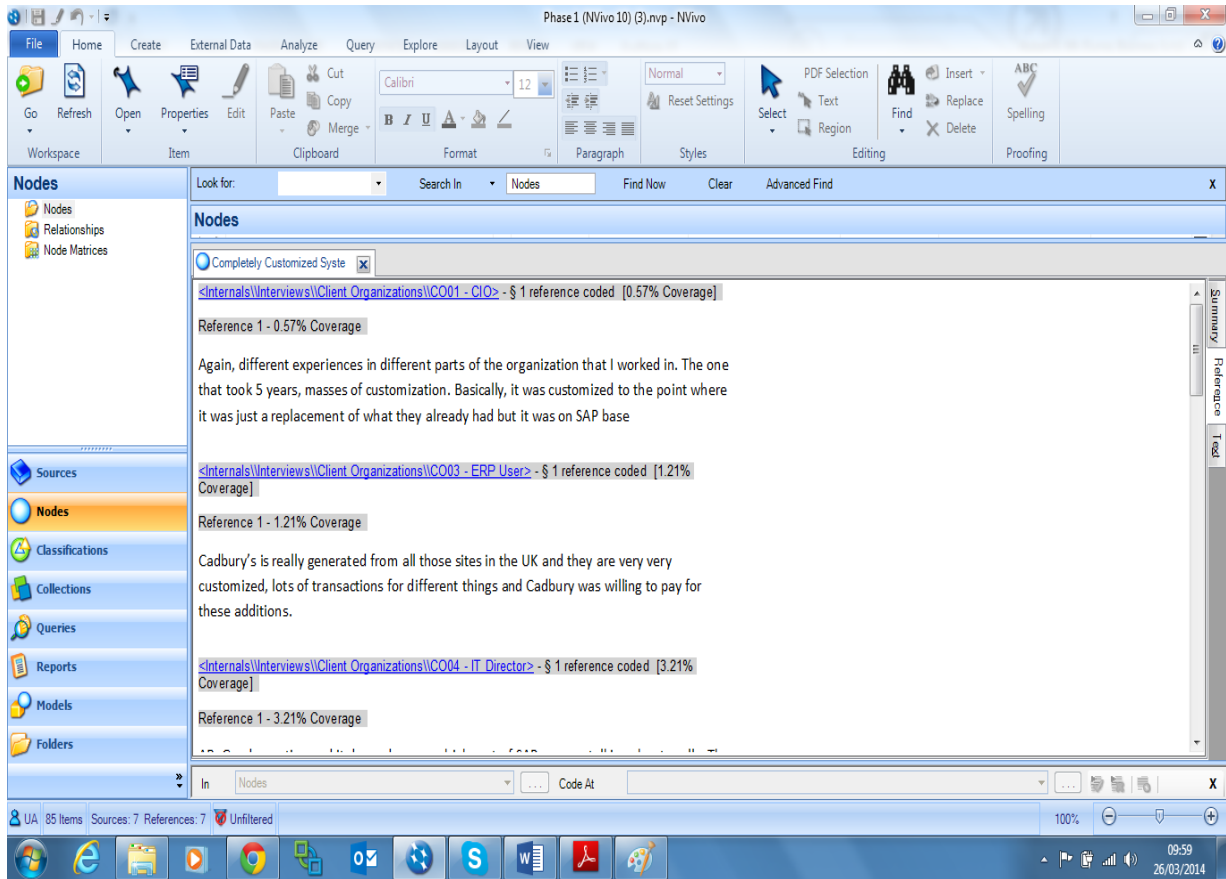
Thanks very much for your time. The information which you have provided is tremendous and will help us understanding some important concepts in the usage of ERP systems.

APPENDIX 2: CODING STRUCTURE FOR PHASE 1

The screenshot displays the NVivo software interface for Phase 1 (NVivo 10) (3).nvp. The main window shows a list of nodes with the following data:

Name	Sources	References	Created On	Created By	Modified On	Modified By
Planned Benefits Realization	0	0	12/10/2011 16:30	UA	12/10/2011 17:50	UA
Benefits Realized Through Vanilla Systems (Example)	0	0	12/10/2011 16:31	UA	12/10/2011 16:31	UA
Any Organizational Change Required to Achieve Be	6	8	12/10/2011 16:52	UA	19/06/2013 18:26	UA
How were these Benefits Identified	4	4	12/10/2011 16:52	UA	19/06/2013 18:26	UA
Degree of Standardization	0	0	12/10/2011 16:39	UA	12/10/2011 16:39	UA
Benefits Realized	0	0	12/10/2011 16:42	UA	12/10/2011 16:42	UA
Benefits Realized Through Customized Systems (Examp	0	0	12/10/2011 16:54	UA	12/10/2011 16:54	UA
Any Organizational Change Required to Achieve Be	5	9	12/10/2011 17:00	UA	17/10/2011 11:58	UA
How were these benefits identified	3	5	12/10/2011 16:59	UA	19/06/2013 18:26	UA
Degree of Customization	0	0	12/10/2011 16:55	UA	12/10/2011 16:55	UA
Benefits Realized	0	0	12/10/2011 16:56	UA	12/10/2011 16:56	UA
Organizational Inhibitors	0	0	12/10/2011 17:13	UA	19/06/2013 19:58	UA
Users Develop Different Views of the System	4	4	12/10/2011 17:13	UA	16/10/2011 19:45	UA
Formation of Groups by the Users with Similar Views	2	3	12/10/2011 17:14	UA	16/10/2011 13:01	UA
Power	2	2	12/10/2011 17:14	UA	16/10/2011 13:12	UA
Politics	2	2	12/10/2011 17:14	UA	16/10/2011 19:48	UA
User Resistance	2	2	12/10/2011 17:14	UA	16/10/2011 16:15	UA
Discourse	1	1	12/10/2011 17:15	UA	16/10/2011 12:42	UA
Emergent Benefits Realization	0	0	12/10/2011 17:24	UA	19/06/2013 19:58	UA
Emergent Benefits Realized Through Vanilla Systems (E	2	2	12/10/2011 17:25	UA	19/06/2013 17:43	UA
Emergent Benefits Realized Through Customized Syste	0	0	12/10/2011 17:29	UA	12/10/2011 17:29	UA

APPENDIX 3: AN EXAMPLE OF CODING FOR PHASE 1



APPENDIX 4: INTERVIEW GUIDE FOR PHASE 2

Background:

1. Can you tell us about your position within the organization?
2. Can you tell us about your title for the project (s)?

Revised Benefits Dependency Network (RBDN):

3. What were the objectives of the project (s)?
4. Can you tell us about the process of organizational changes that were conducted for the project (s)?
 - a. Did you conduct one-off changes to enable the organizational changes?
5. Can you tell us the planned benefits that were realized from the project (s)?
6. Did you witness any organizational inhibitors during the project (s)?
 - a. What actions were taken to resolve the organizational inhibitors?
7. Can you tell us the IT solutions that were implemented as part of the project?
8. Can you tell us about the customizations that were done to the IT solutions?
 - a. What kind of benefits were realized from each customization?
9. Did you realize any emergent benefits from the project (s)?
 - a. Did it require any changes in the business processes?
 - b. Did it require customization of the IT solutions?

Closing:

10. Would you like to add anything to the discussion we have done?
11. Would it be OK to contact you again if I need any clarifications (Preferably through email or phone)?

Thanks very much for your time. The information which you have provided is tremendous and will help us understanding some important concepts in the usage of ERP systems.

APPENDIX 5: CODING STRUCTURE FOR ENERGYCo

The screenshot shows the NVivo software interface with the following data table:

Name	Sources	References	Created On	Created By	Modified On	Modified By
EnergyCo	0	0	20/06/2013 16:19	UA	20/06/2013 16:19	UA
Planned Benefits	5	12	20/06/2013 16:18	UA	20/06/2013 21:30	UA
Business Changes	4	11	20/06/2013 16:18	UA	20/06/2013 20:44	UA
Enabling Changes	4	5	20/06/2013 16:18	UA	20/06/2013 19:52	UA
Organizational Inhibitors	3	4	20/06/2013 16:18	UA	20/06/2013 19:41	UA
System Customizations	3	5	20/06/2013 16:17	UA	20/06/2013 19:34	UA
Emergent Benefits	2	3	20/06/2013 16:18	UA	23/03/2014 15:46	UA
IS-IT Enablers	2	2	20/06/2013 16:12	UA	23/03/2014 15:48	UA
Objectives	1	1	20/06/2013 16:12	UA	23/03/2014 15:50	UA

APPENDIX 6: AN EXAMPLE OF CODING FOR ENERGYCO

