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Raied Mehdi Abdul-Karim

A study of the factors influencing the success of IT-enabled  
change investments in the UK Health Sector.

SCHOOL OF MANAGEMENT

DBA THESIS

Academic Year 2009 - 10

Supervisors: Professor Joe Peppard and Professor John Ward

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Doctor of Business Administration.

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## Abstract

The majority of IT projects across various countries and industries fail or do not realise all their intended benefits. Despite previous research into this area and the development of various project success models, IT projects continue to fail at an alarming rate. This research examines the reasons for this phenomenon and extends the existing knowledge by providing insight and learning into how to successfully manage IT enabled change projects within the National Health Service (NHS) in the UK.

The research used interpretive, retrospective case studies to examine the outcomes of four IT enabled change projects in the NHS. Forty-three face-to-face, semi-structured interviews were conducted to collect a rich source of data for the analysis. A comprehensive body of literature was reviewed and key areas/themes were identified that could be expected to influence project outcomes. These themes were used to develop and structure the interview questions and guide the data analysis.

The research was designed to first learn from successful projects and then contrast the findings with those from less successful projects. In the first empirical study, P1, two case studies of successful PACS (Picture Archiving and Communication System) projects in two NHS hospitals were undertaken. The reasons for their success were fully explored and discussed. The second empirical study, P2, consisted of two case studies of less successful projects: the implementations of an electronic Theatre System and an electronic Order Communication System were studied, and the reasons for their lack of success were explored, studied and contrasted with those in P1.

Analysis of the evidence from the interviews and review of relevant documents, showed that the main differences between the successful and less successful projects were in the management of the following areas: development of the business case for investment, clinical engagement and involvement, stakeholder management (and, in particular, the clinician/manager relationship), awareness and ownership of benefits, project leadership and the capabilities of the project manager, and the type of the deployed technology.

The main contributions of this research include:

1. the development of a new model (based on Pettigrew and Whipp framework, 1991) for managing IT enabled change projects in the NHS
2. the identification of those factors that can significantly impact project outcome and explain many of the reasons for the lack of benefits realisation from IT projects in the NHS.
3. the establishment of a staged benefits management approach that could improve the benefits realisation from IT projects, both in the NHS and in other organisations.

Finally this research identified number of limitations and proposed changes to be considered in future research.



## **Acknowledgements**

It has been my dream since I graduated with my first degree in Electric and Electronic Engineering in 1989 to achieve a doctorate degree. Now that I am almost there, I feel relieved and proud to have nearly achieved my dream; however this has been a very challenging journey, during which I relied on support from various directions to keep me going.

A big thank you and appreciation go to my darling wife Rowaa who has been incredibly supportive, putting up with my stress and my distraction from home for considerable periods of time. Similarly a big thank you to my Mum and Dad who supported me, believed in my abilities and pushed me to achieve.

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# Chapter 1 Linking Document

## 1.1 Background and Rationale for the Research

Many NHS organisations have failed to deliver IT projects successfully, but the NHS is not unique in this: there is a lack of recorded success and realisation of benefits from many IT enabled change projects across various industries. The recorded cost of IT failure is estimated so far at \$6.2trillion and surveys suggest that up to 68% of IT projects fail to deliver to expectations (Krigsman, 2010). There are numerous documented examples of IT projects that failed or did not achieve all of their intended benefits from many contexts and countries including the USA, Australia and the UK (Nelson, 2007; Carlopio, 1998; Wilkinson, Redman and Marchington, 1998; Zbaracki, 1998; Burnes, 1996). There are also many examples of such failures in the public sector in the UK (National Audit Office 2006, 2008; Cabinet Office Report, 2000). Specific recent examples of such projects include the C-NOMIS IT project for prisons and the probation services within the Ministry of Justice and Home Office (Collins, 2009) and the Single Payment Scheme for Farmers project (National Audit Office, 2008) Recent problems experienced by the biggest IT project in the NHS, the National Programme for IT (NPFIT) have raised questions about the ability of IT projects to deliver their intended benefits in the NHS and the value of such projects has become the focus of discussions for politicians and managers (Public Accounts Committee, 2009). Therefore one of the key drivers for this research was to understand the reasons for this high level of failure and the lack of benefits realisation in order to use and share that learning to improve the level of success of future IT projects, particularly within the UK health sector.

The delivery of health care services is complex and IT systems have become an integral part of this complex system. Therefore the failure of IT projects in the health sector has significant impact on the delivery of healthcare services. Such failures also mean that important resources are wasted; resources which could have been used to treat more patients or hire more doctors or improve the quality of care delivered to patients. The confidence of health care professionals and the government in IT in the NHS care is also dented with every failed IT project, leading to increased scepticism about the value of IT solutions and in turn to a reduction in the resources available for IT projects. The public pressure on government and politicians is increased with each project that fails to utilise tax payers' money more efficiently. Therefore improving the level of success and benefits realisation should reduce the level of scepticism in the value of IT solutions and enable the government and other funding agencies to commit more resources to IT projects.

There have been some success stories in delivering IT projects in the NHS and the implementation of PACS (Picture Archiving and Communication System) is a good example of successful IT investment. Another example of a successful IT project is the implementation of IT health systems at GP surgeries (Benson, 2002). Although these systems have been developed through a centralised specification and testing approach, GP Practices were given the freedom to choose any system that met the required

specification. This approach encouraged competition between suppliers and ensured that all these systems delivered a comprehensive, core set of functionalities that were needed to run a GP practice efficiently. Furthermore the GPs were heavily involved in the development and the selection of the technologies and the government incentivised them to use the systems, (Benson, 2002). Studying and learning from such projects in order to improve the level of success and the benefits realisation was a key driver for this research.

The NHS has been the place of work for the author for the past 16 years and he was keen to learn from successful and less successful case studies of IT implementations, in order to improve the outcome of future IT projects. The author has witnessed clinicians and patients suffer as result of failed IT projects, while CIOs and other IT managers continue to struggle to achieve success from their organisations' IT investments. This made the author determined to research this area to understand the causes of the problems, find potential solutions and share the learning from the research to improve the success rate of IT projects.

The NHS is a large and complex institution that was formed to provide care to all those who need it, with no dependency on their social status or ability to pay. The NHS has scarce resources (and the recent global economic problems have caused the government to announce a reduction in NHS resources) and therefore it is important that any investment in IT delivers the intended benefits. The services provided by the NHS impacts all UK citizens in one way or another, and therefore improving the outcome of IT projects in the NHS will help improve the services for the good of the nation.

At the time of this study the author was in the process of implementing a major IT enabled change project (Electronic Patient Records) in a hospital, and was keen to undertake research that would help him and his organisation to implement this major project. Finally a significant driver for this research was to use the knowledge and experience of the academic world to help the author to find practical solutions for some of the problems faced by IT practitioners and business managers. This was a key reason for joining the DBA programme, which offered this unique opportunity of bridging the academic and the practitioner world by finding scientific and research-based solutions to current problems facing the industry.

The question that this research was trying to address was:

How can the realisation of benefits from IT enabled change be improved across the NHS?

This question and the rationale for the research have helped develop the following research objectives:

1. To identify the factors or combination of factors that have most influence on the benefits realised from IT projects in the NHS
2. To identify the reasons for the recorded lack of benefits realisation of IT projects in the NHS.

In order to answer these questions and achieve the research objectives, two case studies of successful IT projects were studied in project one (P1), and two further case



studies of underachieving IT projects were studied in project two (P2). All these projects took place within the NHS (Please note that the names of the organisations used in this document are not the real names of the organisations that were involved in this research). P1 identified the key factors that contributed to success, while P2 identified the main factors that have caused the projects to underachieve. The findings from P1 and P2 provide valuable insights into how to increase the rate of success of IT projects in the NHS and other similar contexts.

There are different definitions of success and failure associated with information technology investments and projects. However, for the purpose of this research, and in order to determine how successful the projects in P1 and P2 were, two well established success models (Nelson, 2005; DeLone and McLean, 2003) were used and applied to the four projects. (Full details of the application of both models across the four case studies are included in P1 and P2.) Furthermore the views of the interviewees in relation to the use and the value of the implemented systems were also taken into account when assessing the success of these projects. An example of the application of Nelson’s 2005 model across the four case studies is shown in table 1. The six areas (Cost, Product, Time, Use, Learning and Value) within Nelson’s 2005 model have been examined across the four projects. The areas that have been satisfied are represented by ticks, while the areas that have not been satisfied are represented by an X; N/A represents the areas that are not applicable and the areas that have been partially satisfied are represented by “Partial”. The table clearly illustrates that the two projects in P1 have satisfied most of the areas within Nelson’s 2005 model.

**Table 1 The application of the Nelson’s model (2005) across the four projects**

	Areas	P1 - PACS G. London	P1 - PACS C. London	P2 -Theatre NE.	P2 - OCS NW.
<b>Process</b>	Cost	N/A	N/A	✓	✓
	Product	✓	✓	✓	✓
	Time	✓	Small Delay	X	X
<b>Outcome</b>	Use	✓	✓	X	X
	Learning	✓	✓	X	Partial
	Value	✓	✓	X	Partial

## 1.2 Gaps in the Literature

On reflection, following the completion of P1 and P2 and synthesising the findings from both these projects, it became clear that the NHS context had a significant impact on the outcome of the projects that have been studied in this research. Similarly the type of the deployed technology and its associated business changes (the content) were key areas that impacted the outcome of the projects. In addition, the processes that underpinned the project factors that have been identified in the project factor model were also significant. Therefore, in this linking document, the Pettigrew and Whipp (1991) framework was found to provide an effective way of understanding the dimensions involved in managing strategic change: the content of change – what is to be changed -, the processes to be used to carry out the changes - how the changes will be managed and the context in which the need for change has arisen and within which the changes have to be carried out. This model helps explain the gaps in the existing literature in relation to the specific context of IT enabled change in the NHS.

The framework has been previously used in IS research (Ward and Elvin, 1999; Frederickson and Mathiassen, 2008) and its dimensions extended to include the ‘outcomes’ of the changes, since almost all IT enabled change projects are initiated with specific intended outcomes or benefits, normally expressed as an investment justification or business case. The adapted framework has four dimensions that can be used to incorporate, segment and understand the main aspects involved in managing strategic or major business and organisation changes:

1. Context – this is split into external and internal.
  - a. The external context is concerned with the prevailing and expected economic and business environment and the external political and social factors that will affect the organisation’s ability to carry out the changes.
  - b. The internal context considers the organisation’s resources and capabilities in relation to the changes intended, plus organisational cultural and political factors.

The external context for this research is the NHS, including the Department of Health (DoH) policies and initiatives and the National Programme for IT (NPfIT). This context has unique characteristics that have been shown to influence its ability to change at both national and local levels and therefore need to be understood and then managed appropriately in order to improve the chances of success of any change initiative, including IT enabled change projects. These characteristics and their influences are discussed in detail in Chapter 2 and summarised below (Pollitt, 1993; Dawson, 1999; Lles and Sutherland, 2001).

- Different socialisation processes of the professions.
- Different needs and expectations of a wide range of client groups.
- Different histories of different institutions.

- Professional autonomy of many of its staff.

The existing literature provides useful guidance on the factors that can affect the outcome of IT projects, but does not address how the complexities of the external context of an organisation such as the NHS affects each of the content, process and outcome aspects of IT enabled change projects.

The internal context for this research are the individual NHS organisations within which the projects were carried out, including the factors that affect these organisations' ability to manage IT enabled change projects, such as their experience and existing deployments of IT, their technical and managerial capabilities, resources and capacity for change. Again, in the studies mentioned above, there are certain prevailing 'localised' issues which influence the options available to different NHS organisations and thereby affect the abilities of different NHS organisations to succeed in making the same or similar changes. For example:

- Local priorities, resource allocation and performance management.
  - Range and diversity of stakeholders.
  - Complex ownership and resourcing arrangements.
2. Content – this is generally concerned with the assessment of what needs to change, the objectives set, assumptions made and then the choices of products and markets. In the NHS and following the initiation of the NPfIT, the selection of the technology was mainly undertaken centrally; however in this research the studied projects covered both technologies that were selected centrally and technologies that were selected by individual organisations. The content in this research was the deployed technologies plus the related enabling and consequential business and organisational changes needed to use the new technologies successfully.

The existing literature deals with the content of IT enabled change projects in a generic way, without paying sufficient attention to the characteristics of the deployed technology and the different types of ancillary changes required to ensure their successful deployments.

3. Process – this is concerned with the how the organisation carries out the changes: the models of change used and methodologies, the roles of project change managers and other staff plus formulation/implementation processes. The existing literature provided good insight into the main factors that can impact projects. However the literature still deals with both IT and change projects in a rather general way and considers each of the factors as separate issues without really addressing their inter-relationships. This meant that the literature had limited guidance about how the change process should be designed and managed for IT enabled change projects in the specific context of the NHS.

4. Outcome – this is concerned with establishing the objectives for the projects and then achieving value from the investments. Pettigrew and Whipp (1991) identified that the interplay between the context, content and process impacts the outcome of strategic change projects in general. However although the relationships between the context, content and process and their impact on the outcome of IT enabled change projects have been explored in prior research (e.g. Ward & Elvin, 1999), they are still not fully understood for IT enabled change projects in the complex context of organisations such as the NHS.

Overall, the literature for managing IT enabled change is fragmented and deals with projects in a generic way. In addition, the existing project success models such as Nelson (2005) and DeLone and McLean (2003) that have been applied in this research were useful but had several limitations within the NHS context. They were found to have a limited view of how benefits could be realised from IT enabled change projects, as they assume that if the system is used then value and benefits will be realised, without considering the need for the wider business changes. The limitations of these models have been discussed fully in this document. Therefore what is missing is a robust model for managing IT enabled change projects relevant to the NHS context.

### **1.3 Methodology**

The initial problem that guided this research was that many IT enabled change projects in the NHS fail or do not realise their intended benefits. This informed the literature review and the formation of the research objectives and question. An extensive literature review of prior research was undertaken covering:

1. Organisational change (Content)
2. Information technology and organisations (Internal Context)
3. Success and failure of IT projects (Outcome)
4. Benefits realisation (Process)
5. Stakeholder management (Process)
6. Leadership (Internal Context)
7. The NHS (External Context)

From these literatures, ten key themes relating to the research question were identified in P1 and further refined in P2; (the refinement included the creation of a new area – stakeholder management – that was merged with the Relationship theme from P1, and the introduction of a new, separate theme called leadership). Within each theme specific questions were developed to form a comprehensive, structured basis for data collection and for undertaking the interviews. These themes and questions were grounded in the literature as demonstrated in P1 and P2. The themes, the questions and the linkage to the literature are fully discussed in P1 and P2. In addition, the themes, the references to the literature and the key messages from the literature are summarised in table 2.

**Table 2 Key messages from the influential literature by themes**

<b>Themes</b>	<b>Influential Literature</b>	<b>Main Messages</b>	<b>Section within the document</b>
The investment decision and The business case	Cabinet Office 2000. McAfee, 2006.  Ward, Daniel & Peppard, 2008.	Business cases only deal with the technology part. Executives are making the investment decision without proper assessment. Many organisations do not demand rigorous evidence to justify the level of the required investment and most business cases do not elicit the necessary business commitment to implementation.	2.3.4 2.3.3  3.8.2
Project structure	Markus, Axline and Petrie, 2000.  Remenyi, 1999.  Ward, Hemingway, and Daniel, 2005; Byrson, 1998.	Projects should have clear stages and pay attention to project team formation. Projects are managed by a small group that follow their own interests. Project teams are dominated by IT staff that influence project focus and outcomes. The involvement of the stakeholders and the reconciliation of their interests are important factors to project outcome.	2.3.2.2  2.3.3.1, 2.5.2  2.2.2, 3.3.2, 2.5.2
The implementation approach	Peppard and Ward, 2005.  McAfee, 2006. Tushman, Newman, and Romanelli 1986  Gersick, 1994.  Zuboff, 1985.	Staff /organisations can only think innovatively once their existing problems are addressed.  Different categories of IT require different implementation approaches.  Rapid implementation will reduce the period of uncertainty. Combining temporal pacing with punctuated change impact projects outcome. There are two aspects to technology implementation: automate and informate. The automation produces information about the underlying processes that could be used to improve these processes.	2.3.3.1  2.3.3 2.3.2  2.3.2.1  2.3.3

The role of the clinicians	Ward, Hemingway, and Daniel, 2005; Byrson, 1998; Freeman, 1984.  Davies and Harrison, 2003; McCartney, Brown, and Bell, 1993.  Kling, 1980; Ury, Brett, and Goldberg, 1993.	The role of the stakeholders and their interests and the need to develop 'coalitions' between stakeholders are key factors to achieving successful outcome.  The clinicians/managers relationship is tense and needs to be managed.  Stakeholders' behaviour and conflict between stakeholders' interests need to be managed.	2.3.3.1, 3.3.2, 2.5.2, 2.3.2, 2.3.5  2.3.5, 2.3.5.1  2.3.5
Communication	Hendy, Reeves, Fulop, Masseria, 2005.	Ineffective communication was a key factor that impacted the progress of NPfIT.	2.2.2
Training	Central Computer and Telecommunication Agency, 2000.	The role of training in improving skills and outcomes.	
Benefits realisation	Ward and Daniel, 2006; NAO, 2006.  Peppard and Ward, 2005.  Banker, Rajviv, Kauffman, and Mahmood, 1993; Berger, 1988; Mahmood and Sczewczak, 1999.  Cabinet Office, 2000.	Benefits management, and implications of poor benefits management, must be effectively addressed.  There are different ways of realising benefits.  Benefits realisation is a key success factor.  Structured approach is required for realising benefits.	2.3.4, 3.8.2  2.3.3.1  2.3.4  2.3.4
Change management	NAO, 2006.  Gardner and Ash, 2003; Markus and Benjamin, 1997; Orlikowski and Hoffman, 1997  Benjamin and Levinson, 1993  Cabinet Office, 2000.  Peppard and Ward, 2005.	Effective management of change is a key success factor.  One of the reasons of the failure of IT projects is lack of focus on change management.  Principles for managing IT enabled change.  Organisational focus on introducing IT systems, rather than the entire change the organisation needed.	3.8.2  2.3.3.1, 2.3..3.1 2.3.3  2.3.3.1  2.3.4, 2.5.2, 2.5.3, 2.5.7  2.3.3.1

	<p>Macredie and Sandon, 1999</p> <p>Orilkowski, 1992</p> <p>Pettigrew, McKee and Ferlie, 1992; 1998</p>	<p>Successful implementation should first establish links between IT enabled change and the vision for the business, and then innovate in selected processes and activities. “IT enabled change managers should begin with an objective rather than a plan, and respond to conditions as they arise in an ad-hoc fashion.”</p> <p>The duality of technology – Technology has physical and social characteristics that should be taken into account.</p> <p>Managing change comprises the management of the context, content and process.</p>	<p>2.3.3.1</p> <p>2.3.3</p> <p>2.2.1, 1.5.2</p>
Stakeholder management	<p>Boonstra, Boddy and Bell, 2008.</p> <p>Freeman, 1984; Greenly and Foxall, 1998; Scott and Lane, 2000. Carroll, 1989; Clarkson, 1995; Mitchell, 1997. NAO, 2006.</p> <p>Davies and Harrison, 2003; McCartney, Brown, and Bell, 1993.</p> <p>Nelson, 2005</p> <p>Ward, Hemingway, and Daniel, 2005.</p> <p>Mitchell, 1997; Boonstra, Boddy and Bell, 2008.</p>	<p>The management of stakeholders in inter-organisation projects is more complex. Relationships between stakeholders will be impacted by such projects and internal changes within each organisation will be required.</p> <p>Defining the stakeholders is a key activity in managing projects. Customer/supplier relationship impacts project outcome.</p> <p>The clinicians/managers relationship is tense and needs to be managed.</p> <p>Different stakeholders have different interests and different measures of success.</p> <p>It is important to understand stakeholders’ behaviours and the required management styles at different stages of the project. How stakeholders’ power and influence impact projects.</p>	<p>3.3.2</p> <p>2.3.5, 3.3.2</p> <p>3.8.2</p> <p>2.3.5, 2.3.5.1</p> <p>2.3.6</p> <p>2.2.2, 3.3.2</p> <p>3.3.2</p>
Leadership	<p>Kerzner, 2006.</p>	<p>IT focused leadership and its impact on project outcome.</p>	<p>3.3.3.4</p>

	<p>Nelson, 2007. Gabris and Ihrke, 1996; Church 1995, Gabris, Golembiewski and Ihrke, 2001; Gabris and Ihrke, 2007.</p> <p>Bass, 1985; Yukl, 1998; Avolio, Bass and Jung, 1999.</p> <p>Gabris and Ihrke, 2007. Mitchell, 1997; Boonstra, Boddy and Bell, 2008.</p>	<p>Project managers should be experienced in managing processes and people. Credibility of the project leadership impacts outcomes.</p> <p>The management style and the attributes of the leader impact projects.</p> <p>The roles of middle and junior managers are important in managing projects. There are different strategies for managing conflict between stakeholders.</p>	<p>1.5.2, 3.7.8 3.3.3.3, 3.8.2 3.3.3.3</p> <p>3.3.3.1, 3.3.3.2</p> <p>3.3.3.3 3.3.2</p>
Project success	<p>Thong and Chee-Sing ,1996; Dalgleish, 2000; Sauer, 1999; Fincham, 2002; Lyytinen and Hirschheim, 1987.</p> <p>Nelson, 2005; DeLone &amp; McLean 2003.</p> <p>Fincham, 2002.</p> <p>Nelson, 2007</p>	<p>Definition of project success and failure.</p> <p>Models of project success.</p> <p>Three different perspectives (rationalist, process, narrative) to examining success and failure. Factors that impact project outcome.</p>	<p>2.3.6</p> <p>2.3.6, 2.6, 3.8.1, 3.8.3, 3.8.5</p> <p>2.3.6</p> <p>1.5.2, 3.7.8</p>



An interpretive, retrospective case study method was used for both P1 and P2, as in depth information was needed in order to understand the underlying causes of success or failure and also to understand the reasons for the extent of the benefits realised. An interpretivist perspective was used to understand the meaning and the interpretation given by the interviewees to their experiences and views about the outcome of the IT projects, the realisation of benefits and the management of these projects over their entire life cycles. Furthermore this perspective supported the use of the lay language used by the interviewees that provided further insight into their experiences. Interpretive research makes use of meanings, interpretations and motives that shape people's behaviour. "For interpretivism, the social world is the world interpreted and experienced by its members, from the inside. Hence the task of the interpretive social scientist is to discover and describe this insider view, not to impose an outsider view on it" (Blaikie, 2000).

A case study approach was chosen as it was suitable for questions that were concerned with understandings and descriptions, such as "how and why" questions, which was the case in this research. The case study as a research strategy comprises an all-encompassing method, covering the logic of design, data collection techniques and specific approaches to data analysis (Stocker, 1991). Case studies generate extensive data that are relevant to the particular context and can provide the rich explanations that are required for interpretive study (Miles and Huberman, 1994).

In order to understand the factors that impact project outcome and the reason for the extent of the benefits realised, retrospective case studies of successful and underachieving projects were undertaken, in order to elicit the interviewees' perspectives of both the conduct of the projects and the benefits actually gained during and after implementation.

P1 was designed to study two cases of successful IT-enabled change, in order to understand the factors that contributed to that success. The two case studies were the implementation of PACS (Picture Archiving and Communication Systems) in two NHS hospitals in London. The PACS implementation was part of the NPfIT. P2 studied two cases of less successful IT enabled change, in order to identify the factors that contributed to their lack of success. The first case study in P2 was that of a new theatre System in an NHS hospital. This project failed to realise most of its intended benefits, overran considerably and created tensions between different professional groups within the organisation. The second case study in P2 studied the implementation of an Order Communication System (OCS) across an NHS hospital and various GP surgeries. This project also overran, did not engage all the key stakeholders and, although some benefits were achieved, many of its intended benefits were not realised.

The main method of data collection was semi-structured interviews. In addition, other sources of data were used including the organisations' business cases, annual reports, minutes of project progress meetings and other documents relating to the projects. A stratified sample of participants was selected for each of the four case studies. The total number of participants across the four case studies was 43 and the interviewees in each of the case study sites included managers, nurses, doctors and IT staff from different departments and in the last case different organisations. This helped

to capture different perspectives and viewpoints and enrich the findings. Interviews and data collection principles that were recommended by Walsham (2006) and Blaikie (2000) were observed, including time keeping, confidentiality, recording and transcribing of interviews, the role of the interviewer and the authentication of transcriptions by the interviewees. The quality criteria for data collection, including the selection of participants from a variety of groups involved, the use of multiple data sources and linking the interview questions to the literature, were observed throughout the four case studies. The four case studies provided a rich source of data and enabled the identification of a variety of factors that impacted the outcome of these case studies, as they covered the following range of characteristics:

1. NPfIT led implementations and locally led implementations
2. Centrally funded projects and locally funded projects
3. Centrally selected technologies and locally selected technologies
4. Implementations within organisations and implementation across organisations

The collected data were analysed using explanation building and data analysis both in-case and across the cases. A computer aided tool (NVIVO) was used as data reduction tool to help illustrate and present the findings in a format that is visual and easily understood. In-case data analysis entailed, for each case study, an analysis of the themes that were used to structure and interpret the data within the context of the literature. The analysis was supported by evidence from the interviewees and references to key project documents and publications. The cross case analyses were undertaken separately for the pairs of projects within P1 and P2 and then jointly for the four case studies. The cross case analyses compared and contrasted the findings from the different case studies.

## **1.4 Summary and Analysis of the Four Case Studies Including Key Findings**

The four case studies that were undertaken in P1 and P2 are summarised and analysed in this section. In order to understand the impact of the context on the outcome and the findings of these case studies, the key contextual characteristics are identified and compared across the four case studies, as shown in table 3.

**Table 3 The contextual characteristics of the four case studies**

Characteristics	PACS Greater London Trust	PACS Central London Trust	Theatre North East Trust	OCS North Trust
NHS Hospital	✓	✓	✓	✓
Foundation Trust	<b>X</b>	<b>X</b>	✓	✓
Intra-organisational project	✓	✓	✓	<b>X</b>
Inter-organisational project	<b>X</b>	<b>X</b>	<b>X</b>	✓
NPfIT Project	✓	✓	<b>X</b>	<b>X</b>
Government funding	✓	✓	<b>X</b>	<b>X</b>
Central project management	✓	✓	<b>X</b>	<b>X</b>

The first difference between the four case studies is that the two hospitals that had less successful projects were foundation trusts hospitals while the successful projects were implemented in non foundation trust hospitals. This could be due to the fact that when the PACS implementations were studied in 2006, the foundation status was in its infancy and these two trusts were at the early stages of preparation to achieve this new status. However the two foundation trusts that had less successful implementations had only been awarded the foundation status after the completion of these projects, and had had to put in place new management and governance arrangements that had not matured at the time of implementing these projects. This could have had an impact on the outcome of these projects.

One of the less successful projects (the OCS) was an inter-organisational project. This meant that there were many stakeholders and organisations involved. The diversity of the stakeholders, their interests and relationships were factors that impacted the outcome of the project. It can be reasonably concluded that such projects are complex and require special attention and effort to manage stakeholders' relationships and interests, in order to improve their chances of success.

Both of the successful projects were part of the NPfIT programme, while the other less successful projects were locally initiated and managed. It can be argued that the PACS projects had a very good chance of success from the start. This was due to the fact that this technology was tried and trusted with proven benefits to all stakeholders.

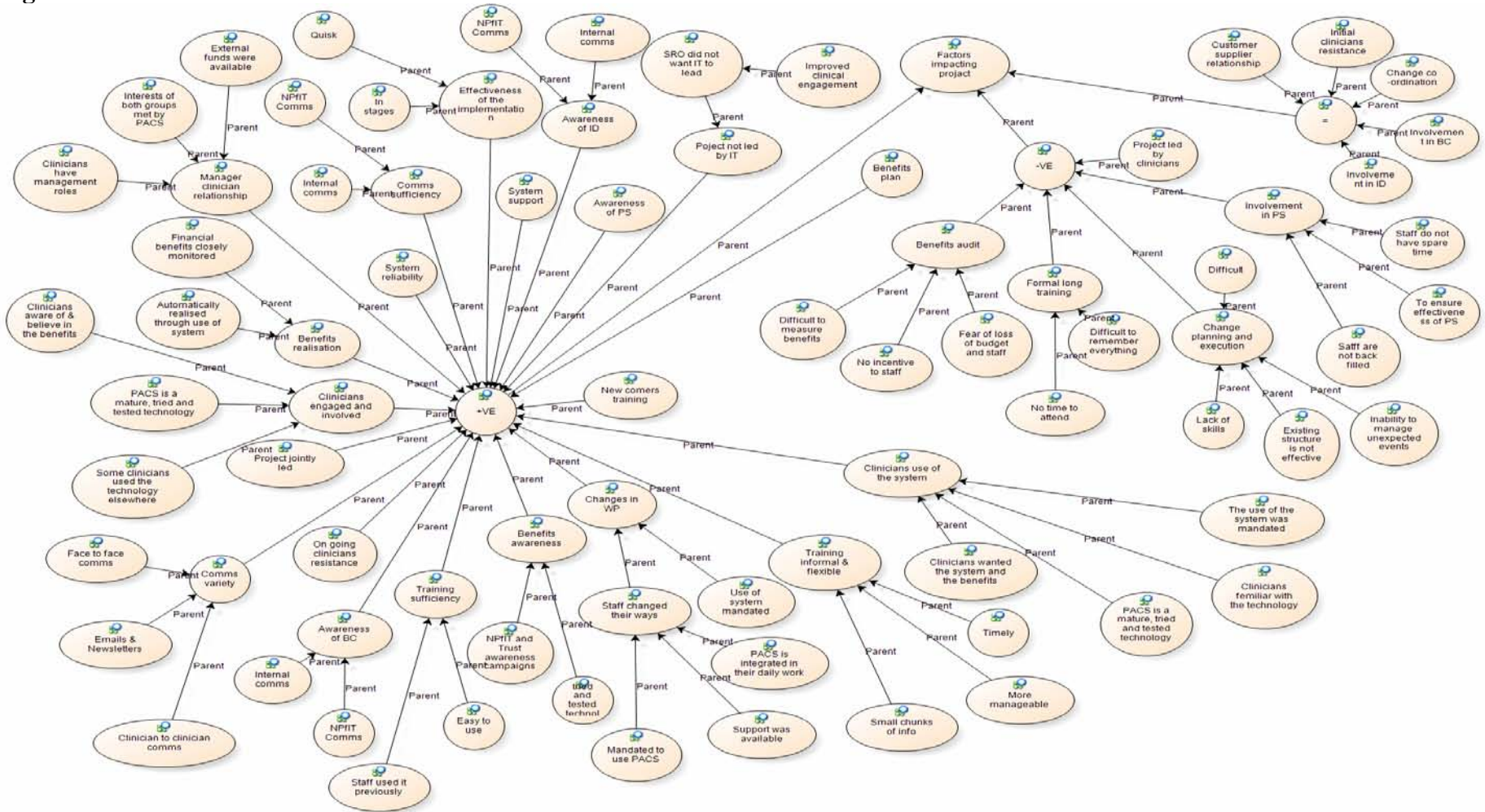
Furthermore the technologies were integrated into the daily working practices of clinicians, and the clinicians were urging the organisations to implement such systems. However the NPfIT had a big impact on the project outcome due to number of factors.

1. The NPfIT ran effective publicity and awareness campaigns to raise the profile of the PACS technologies and highlight their intended benefits.
2. The NPfIT provided a robust business case structure that ensured most of the necessary details required for the business case were included. For example, the PACS business cases were around 150 pages while the business cases for the Theatre and the OCS project were only a few pages. Although the size of the business cases is not necessarily a quality measure, it does provide a guide to the level of comprehensiveness of these documents.
3. The NPfIT provided experienced project management resources to support the implementations of these projects, while the theatre and the OCS projects both lacked the involvement and the leadership of an experienced project manager.
4. The implementation of the PACS solutions was a government target across all NHS hospitals that had to be delivered through the NPfIT. Therefore NHS organisations and their senior management were expected to deliver these targets successfully.
5. The PACS projects enjoyed the availability of funds from the government through the NPfIT. Therefore these projects had dedicated resources for areas such as project management, training, etc, unlike the theatre and the OCS projects.

#### **1.4.1 How the data were analysed and presented**

Due to the large amount of the data that needed to be analysed in this research, coding and explanation building were used to analyse the data. The data analysis technique is discussed briefly in the methodology section in this linking document and in more detail in both P1 and P2. A recognised computer tool, NVIVO, was used to aid the data analysis. This tool uses an effective data reduction technique to reduce the data and aids the researcher in analysing the data. The outcome of the data reduction is illustrated in figures 1 to 4 below. The diagrams illustrate the data in hierarchical structure, through the use of parent/child relationships. The diagrams illustrate the causes of a particular phenomenon and help the researcher to explain the findings.

Figure 1 Greater London Trust PACS





**Figure 3 Theatre System**

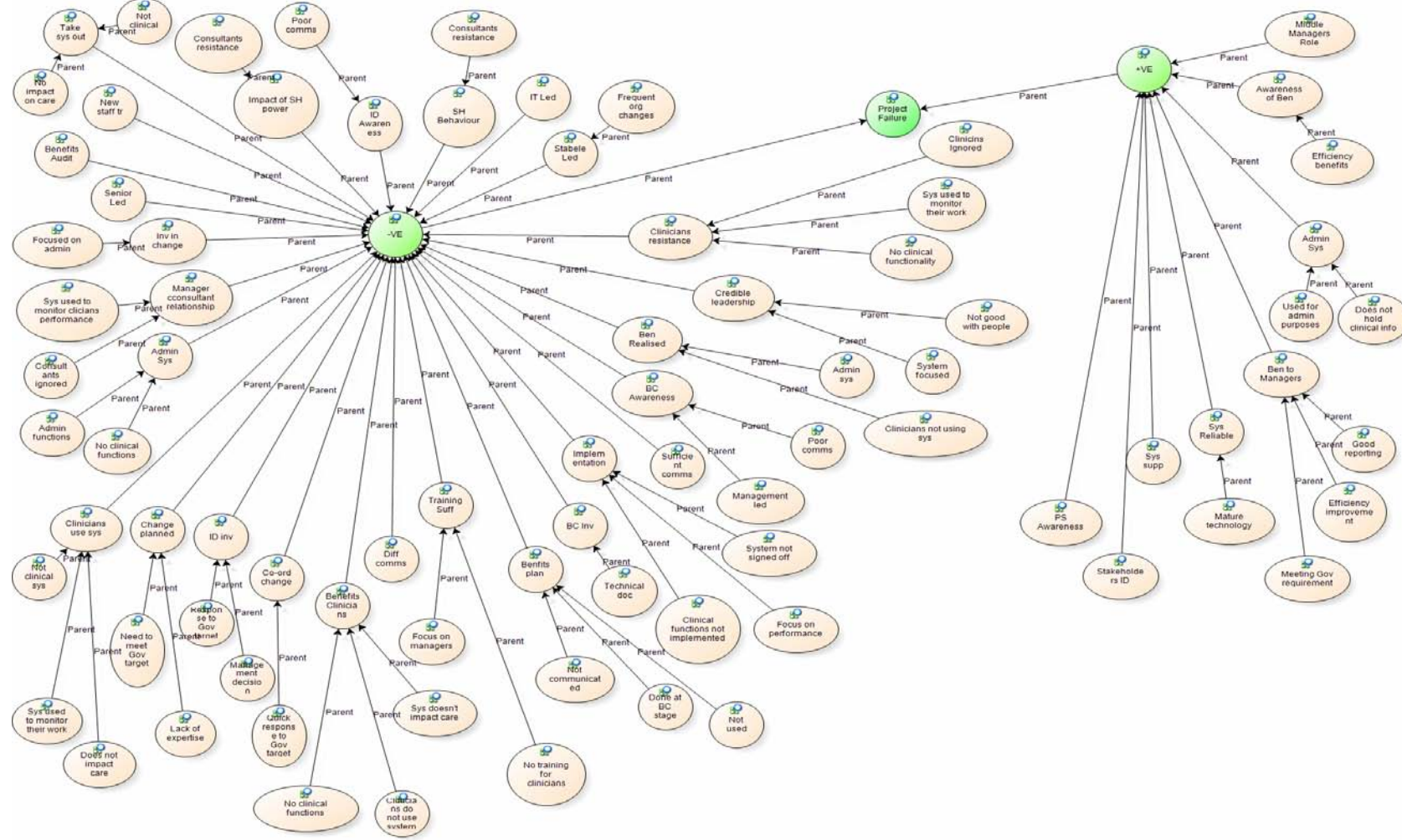
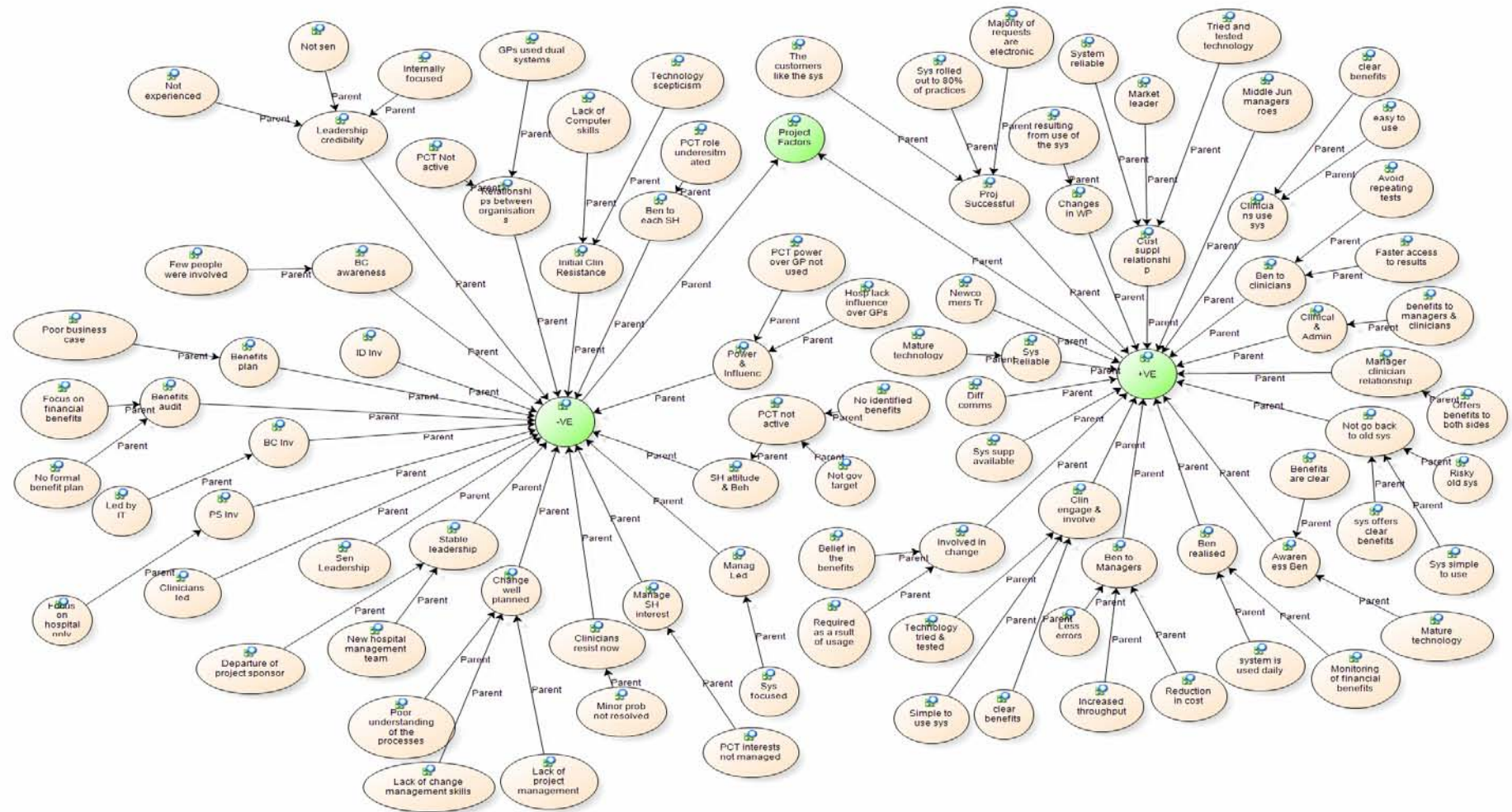


Figure 4 OCS system





The use of a computerised tool throughout the four case studies has been very valuable in following a systematic approach to analysing and reducing the vast amount of data. Comparison of the four diagrams (figures 1 to 4) illustrated vividly the outcomes of the data analysis and helped the development of the findings. In the diagrams in figures 1, 2, 3 and 4, for example, it can be seen that the number of factors that have been managed effectively (+ve) in the PACS projects are considerably more than those in the theatre and the OCS projects. This also indicated that the interviewees were, overall, satisfied with the outcomes of the PACS project, despite the fact that some areas could have been managed more effectively, such as the management of change and benefits. The diagrams also indicate that the stakeholders were less satisfied with the outcome of the OCS project and even less with the theatre project.

The diagrams illustrated that one of the differences between the successful and less successful projects was that the successful projects were led by clinicians or by clinicians and managers jointly. However the less successful projects were led by IT or management without clinicians' input. The diagrams provide a further illustration of the impact of the lack of clinical project leadership in the less successful projects by indicating that these projects became system and technology focused. Furthermore, on the topic of leadership it was illustrated that both of the successful projects had stable and senior leadership, which was not the case in the less successful projects.

In the successful projects there was no ongoing clinician resistance to the use of the system and this was because the benefits to clinicians were clear and the technology was easy to use. However in the less successful projects, particularly in the theatre project, the diagrams illustrated that clinicians resisted the use of the system for the following reasons:

- a) Clinicians' views were ignored
- b) The system offered no clinical functionality
- c) The system was used to monitor their work

Another example that can be drawn from these diagrams is that in the successful projects the clinician/manager relationship was positively impacted by the implementation of the PACS. This was due to the following factors:

- a) The interests of both groups were met
- b) More clinicians were occupying management roles (hence a better understanding of each other's roles)
- c) Resources were made available centrally (which is normally a source of tension between the two groups)

However the diagrams illustrate that the relationship between the clinicians and managers was less effective in the theatre project for the following reasons:

- a) The consultants' views were ignored
- b) The system was used to monitor the work of the consultants

The systematic process that was undertaken in designing the research, reviewing the literature, collating and analysing the data have revealed some key lessons and learning through the identification of the key factors that contributed to the success of IT enabled change in the NHS (Success Factors) and the key factors that have hindered the success of these projects (Failure Factors). A summary of the findings against each theme in the four business cases is included in table 4.

**Table 4 Summary of the findings of the four case studies**

<b>Summary of the findings – Greater London Trust– PACS</b>	<b>Summary of the findings – Central London Trust- PACS</b>	<b>Summary of the findings – North East Trust – Theatre system</b>	<b>Summary of the findings – North Trust –OCS</b>
<p><b>Project outcome</b></p> <hr/> <p>There was overwhelming support, indicating that the PACS project was successful and users preferred PACS to the old system.</p>	<p><b>Project outcome</b></p> <hr/> <p>The interviewees had strongly supported the new system, and clearly indicated that they would not like to revert to the old system. Furthermore they believed that the project was successful.</p>	<p><b>Project Outcome</b></p> <hr/> <p>The evidence collected from the key project documentations, the interviews and analysis indicated that this project underachieved. All the consultants indicated that they would not miss the system if it was taken out.</p>	<p><b>Project Outcome</b></p> <hr/> <p>The evidence collected from the key project documentation, the interviews and analysis indicated that this project underachieved. However the project managed to realise some financial benefits and change some of the working practices at the sponsoring organisation, but not across all the key stakeholders. The majority indicated that they would not revert back to the old system. However some GPs continued to use the old system too.</p>
<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <hr/> <p>There was a good level of awareness of the BC and the ID, suggesting that these activities were well publicised. However there was a low level of involvement in the investment decision and the development of the business case. Only a few managers and the Director of Radiology Services were involved. The BC and the ID were superficial as they were driven and funded by the NPfIT; however the BC had a better structure and details within it.</p>	<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <hr/> <p>There was a positive (majority) support to the level of awareness of the BC and the ID, although this was not as strong as in Greater London Trust. There were split views on the levels of involvement in the investment decision and the development of the business case. The BC and the ID were superficial as they were driven and funded by the NPfIT; however the BC had a better structure and details within it.</p>	<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <hr/> <p>Involvement in the decision making and the BC development was low, as the investment decision was driven by a government initiative to improve theatre throughputs in the NHS. Awareness of the ID was moderate, but low for the BC. The technology was mature and selected by the organisation. The ID and the BC were led by management through the Director of Performance and Information. The business case was poor and lacked some crucial details including full costing of the investment, stakeholder</p>	<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <hr/> <p>Involvement in the decision making and the BC development was low. Awareness of the ID was moderate, but low for the BC. The technology was mature and selected by the organisation. The ID and the BC were led by management through the Director of IM&amp;T. The business case was poor and lacked details of the project management arrangement, stakeholder analysis and full and comprehensive costing.</p>

		analysis, etc.	
<p><b>Project Structure</b></p> <hr/> <p>There was a low level of involvement in the project structure, which was expected, but a good level of awareness of it. There was a majority support believing that the project was led by clinicians. The findings from the interviews also suggested that the project had a wider remit than technology, which could have helped to get more clinicians engaged.</p> <p>The project had a dedicated, qualified and experienced project manager. The Lead Radiologist was also the clinical lead for the project, and worked closely with the project sponsor and the project manager</p>	<p><b>Project Structure</b></p> <hr/> <p>At Central London Trust the level of involvement in the project structure was low. The level of awareness of the project structure was good but not as good as Greater London Trust. The majority of the interviewees believed that the project was jointly led by IT and clinicians.</p> <p>The joint leadership of the project ensured that the project was not dominated by IT, and as a result the project had a better appeal to clinicians. The project had a dedicated, qualified and experienced project manager. There was also a clinical lead that worked closely with the project sponsor and the project manager</p>	<p><b>Project Structure</b></p> <hr/> <p>Involvement in the project management structure was low but awareness of it was high. The high level of awareness could be down to the fact that the majority of the stakeholders were internal and confined within few departments.</p> <p>The project manager did not have project management experience or knowledge of a project management methodology. There was no dedicated clinical lead.</p>	<p><b>Project Structure</b></p> <hr/> <p>Involvement in the PS was low but awareness of it was moderate. The lower level of awareness of the PS in comparison to the theatre project could be down to the fact that many of the project stakeholders were external and communications could be more challenging. The hospital recognised this at a later stage and tried to rectify it through the recruitment of a dedicated trainer, who was also responsible for raising awareness amongst GP practices.</p> <p>The project manager did not have project management experience or knowledge of a project management methodology. There was no dedicated clinical lead; however there was a GP representative acting on behalf of the GPs.</p>
<p><b>The implementation approach</b></p> <hr/> <p>The interviewees were happy with the implementation approach and they preferred the staged and rapid implementation of the project.</p> <p>A system support arrangement was in place and the majority believed that the system was reliable. This was due to the fact that the deployed technology was mature and tested.</p>	<p><b>The implementation approach</b></p> <hr/> <p>Generally the interviewees were happy with the technology, the support arrangements and the project implementation approach.</p> <p>Overall, people preferred the staged and rapid implementation of the project. However they criticised the lack of planning to manage the operational problems that resulted from</p>	<p><b>The implementation approach</b></p> <hr/> <p>The implementation of the system took much longer than expected. The system was implemented in a big bang approach across the theatres, and then it was very slowly rolled out to other departments.</p> <p>The implementation was heavily criticised by the consultants due to the implementation of the administrative</p>	<p><b>The implementation approach</b></p> <hr/> <p>The implementation of the system took much longer than planned and was staged, starting with the hospital, then the large GP practices and finally the smaller GP practices.</p> <p>The implementation was criticised by the hospital due to the lack of focus on change management and clear policies for the GP surgeries. However the GP</p>

	the initial delay in implementing the project.	functionality of the system only.	practices were happy with the implementation.
<p><b>The role of clinicians</b></p> <hr/> <p>All the interviewees indicated that the system was used widely by staff. There was limited initial resistance to the use of the system. However, the level of resistance was drastically reduced once the system was implemented.</p> <p>The project had a good level of clinical involvement and support.</p>	<p><b>The role of clinicians</b></p> <hr/> <p>The interviewees believed that the system was used by all. The interviewees' views were split on the existence of initial resistance to the project. However the level of ongoing resistance was very low. Clinicians' engagement and involvement was strong.</p>	<p><b>The role of clinicians</b></p> <hr/> <p>Initially there was good level of clinical engagement and involvement in the project. However, after the realisation that the system would mainly be used for administrative and management purposes, the consultants resisted the system and its use.</p> <p>Many of the nurses continued to use and support the system as they needed to use the administrative part of the system to manage patient flow.</p>	<p><b>The role of clinicians</b></p> <hr/> <p>Overall there was good level of clinical engagement and involvement. There was limited initial and ongoing resistance, and the resistance was mainly due to financial or technical issues rather than to the use of the system or lack of belief in the benefits it would deliver.</p> <p>The GP use of the system is not systematic or consistent due to lack of policies and, in some cases, lack of computer skills. The majority of clinical and non clinical staff liked the system, used it and actively endorsed it.</p>
<p><b>Communication</b></p> <hr/> <p>Communication was good and staff were aware of the project's benefits and the implementation timetable. A variety of communication methods were used in this project.</p> <p>Clinician-to-clinician communication was used in this project, and was described as an important tool to secure clinicians' engagement and support to the project. The NPfIT communication campaign to promote the first implementation at Greater London</p>	<p><b>Communication</b></p> <hr/> <p>The communication for this project was effective. A variety of methods were used to communicate with staff, including clinician-to-clinician, newsletters, emails, etc.</p>	<p><b>Communication</b></p> <hr/> <p>Communication between the project board and the staff was poor and there was no dedicated communication resource.</p>	<p><b>Communication</b></p> <hr/> <p>Communication between the project board and the staff was slightly more effective than in the theatre project. There was no dedicated communication resource, but at the later stages of the project the system trainer was charged to raise awareness and improve communication with GP practices.</p>

Trust also made a positive impact.			
<p><b>Training</b></p> <hr/> <p>Training was good, and interviewees felt the system was easy to use and therefore limited training was required. Short and flexible training delivery was used and was effective. Clinicians felt this was more effective than formal and long training sessions, as it was easy to remember the information and did not require major time commitment.</p>	<p><b>Training</b></p> <hr/> <p>Overall the training on this system was not a major concern or issue, and the interviewees were content with the received training. However the issue of timing of the delivery of the training was raised as a concern. Users also preferred short and flexible training to the long and formal format.</p>	<p><b>Training</b></p> <hr/> <p>There was no dedicated training resource and the lack of training was heavily criticised by the interviewees.</p>	<p><b>Training</b></p> <hr/> <p>There was no dedicated training resource at the early stages of the project, but after realising the increasing demand for training from GP practice staff, the hospital invested in a dedicated trainer. The majority of the interviewees were happy with the initial and ongoing training provided on the system.</p>
<p><b>Benefits Realisation</b></p> <hr/> <p>All the interviewees were aware of the potential benefits of the project, and they all believed that these benefits were being realised. However the process of benefit realisation was not managed effectively. The benefit plan was produced at the business case stage, partly populated by NPfIT, and was not used much after that. There was no effective audit of benefit realisation, due to fear that budgets would be reduced and staff would be made redundant.</p> <p>In summary this organisation has realised and measured the financial benefits, but believed that they realised but did not formally measure the non-financial benefits. The only evidence available to support the realisation of non financial benefits was the daily experiences of clinicians and managers</p>	<p><b>Benefits Realisation</b></p> <hr/> <p>All the interviewees were aware of the benefits of the project, and a strong majority believed that these benefits were being realised. However the realisation of benefits was not managed effectively. There was a formal benefit plan in place, but most of it was populated by NPfIT, and therefore there was little ownership of the plan by staff. There was no effective audit of benefit realisation. There was also strong evidence that the financial benefits had been measured and realised. The interviewees were able to describe how the non-financial benefits were realised but there was no evidence in terms of audit or recording to support this finding. Generally staff didn't see the value of having a formal approach to benefits management as they believed that the benefits were very obvious and</p>	<p><b>Benefits Realisation</b></p> <hr/> <p>There was good level of awareness of the benefits. In general the managers believed that the benefits were realised routinely but the clinicians did not agree: the consultants believed that there were no benefits for them from the system. There was no formal benefit plan and no benefit audit had taken place. The reality was that many potential benefits had not been realised due to the lack of consultants' engagement.</p>	<p><b>Benefits Realisation</b></p> <hr/> <p>There was a good level of awareness of benefits and the majority of interviewees believed that the benefits were routinely realised. There was no formal plan and no formal audit apart from a limited assessment of the financial saving at the Pathology department. Both managers and clinicians believed the system offered them a set of benefits. However many potential benefits were not realised due to the lack of policy for GP practices on the use of the system, which resulted from the lack of engagement of a key stakeholder, the PCT.</p>

as they were described in the interviews.	they could be realised without any plans.		
<p><b>Change Management</b></p> <hr/> <p>Few interviewees answered the questions about the management and the coordination of change, as they were not fully aware of how the management of change fitted in with the project or they were not aware of other projects or initiatives across the organisation. There was acknowledgement that the management of change was difficult.</p> <p>All the interviewees believed that changes in working practices were achieved, but in the main these changes were close to the technology rather than across the patient journey.</p>	<p><b>Change Management</b></p> <hr/> <p>Overall the changes in working practices required for the effective use of the system have been achieved. However there was no evidence to suggest that the wider changes in the system, away from the use of the technology, were achieved. The way change was managed and coordinated was not very effective. The level of disruption could have been minimised and the level of user satisfaction could have been improved, if the change had been managed effectively. This again pointed to the lack of clear processes to manage change effectively, and possibly the lack of skills in this area. Furthermore the view of the managers was clearly different from that of the clinicians. Clinicians felt this area was not managed effectively, but the managers disagreed.</p>	<p><b>Change Management</b></p> <hr/> <p>The management and the execution of the change were poor and there was lack of coordination with other change initiatives. The consultants did not believe that changes in working practices took place but the managers did.</p> <p>There was no evidence of process redesign or changes in working practices.</p>	<p><b>Change Management</b></p> <hr/> <p>The management and the execution of the change were poor and there was lack of coordination with other change initiatives.</p> <p>The majority believed that changes in working practices had taken place and there was evidence of these changes on the hospital side. However there was no evidence to suggest changes in working practices had taken place at GP practices. This was due to the lack of understanding of the processes at GP practices and the lack of skills in managing change.</p>
<p><b>Stakeholders Relationships</b></p> <hr/> <p>Very few interviewees were able to comment on the nature of the relationship between the organisation and the supplier. However there were clear indications that this relationship was complicated. This was due to the complexity of the NPfIT contractual arrangement with the suppliers, which made it difficult for the organisation to</p>	<p><b>Stakeholders Relationships</b></p> <hr/> <p>Similarly, at Central London Trust very few interviewees were able to comment on the nature of the relationship between the organisation and the supplier. This relationship was described as complicated and unhelpful, and it was felt that a direct relationship between the organisation and the system supplier would have</p>	<p><b>Stakeholders Management</b></p> <hr/> <p>The majority of the interviewees were able to identify the project stakeholders. The majority believed the project had negatively impacted the clinician manager relationship. Furthermore, the relationship between the organisation and the system supplier was difficult due to the constant changes in the system owners.</p>	<p><b>Stakeholder Management</b></p> <hr/> <p>Approximately half of the interviewees were able to identify the project stakeholders. This could be due to the fact that there were more external stakeholders in comparison to the theatre project.</p> <p>The project has negatively impacted various stakeholder relationships. The relationship between the hospital and</p>

<p>have direct access to the system supplier.</p> <p>There was a majority support suggesting that the clinician-manager relationship was good, despite the existence of some tension between the two sides about resources.</p>	<p>been beneficial.</p> <p>There was tension between the managers and clinicians, but it was limited, and this project did not increase such tension. Interviewees generally were positive about the relationship between the managers and clinicians.</p>	<p>The initial attitude and behaviour of the stakeholders were positive and supportive. However the attitude and behaviour of the consultants changed to the opposite after their realisation that the system would be focused on administrative and management functionality.</p> <p>The consultants exercised their power by refusing to use the system and the managers felt powerless to change this.</p>	<p>the PCT suffered due to the fact that the PCT did not play an active role in this project. The relationship between some of the GP practices, (those that refused to use the system on one side and the hospital and the PCT on the other side) has suffered too.</p> <p>The attitude and behaviour of the PCT was negative towards the project from the start and they did not exercise their power to influence the GP practices to use the system.</p> <p>The hospital had no power or influence over the GP practices and was unable to ensure that all GP practices used the new electronic system and stopped using the old paper system.</p>
<p><b>Leadership</b></p> <hr/> <p>There was senior, stable and credible leadership for the project. The project sponsor was a Senior Executive Director who had been in this organisation for many years. Furthermore the project sponsor was closely supported by a Clinical Director that was the clinical champion for the project. The clinical champion was also the communication lead with clinicians. This helped to encourage more clinicians to be actively involved in the project. There was a dedicated and experienced project manager.</p>	<p><b>Leadership</b></p> <hr/> <p>There was senior, stable and credible leadership for the project. The project sponsor was a Senior Executive Director who had been in this organisation for many years. Furthermore the project sponsor was closely supported by a Clinical Director who was the clinical champion for the project.</p> <p>There was a dedicated and experienced project manager who had received many positive comments from the project board members about his approach to managing the project.</p>	<p><b>Leadership</b></p> <hr/> <p>The organisation experienced significant organisational change during the life of the project. The project was management led, with significant input from IM&amp;T. This led the project to be focused on the technology rather than the change and the people.</p> <p>The project leader was not very credible and had little influence over the consultant group. The project manager had no skills or experience of managing projects.</p>	<p><b>Leadership</b></p> <hr/> <p>The organisation experienced significant organisational change during the life of the project. The project was management led, and the leadership of the project changed earlier on in the project life cycle. The eventual leader was not credible and had no influence on external stakeholders. The project manager did not have the skills or the knowledge of managing projects.</p>



### 1.4.2 The main differences that influenced the projects' outcomes

The project factor model that was developed in P1 and was further refined in P2, is shown in table 5. The project factors were identified following the review of the literature and were grouped into three areas. Pre-project factors relate to activities that took place before the start of the implementation; the project factors relate to the activities that took place during the implementation phase of the project; and the post project factors relate to activities that took place after the implementation phase of the project is completed. The factors that are highlighted in bold are those that had the significant impact on the outcome. Those that are underlined were the common weak areas across all the projects.

**Table 5 Project factors model**

<b>Pre-Project Factors</b>	<b>Project Factors</b>	<b>Post-Project Factors</b>
Investment decision involvement & awareness	Effectiveness of the implementation approach	Changes in working practices
<b>Business case involvement &amp; awareness</b>	Communication sufficiency & variety	<u>Benefits realisation</u>
Initial clinician resistance	Training sufficiency & delivery Method	Benefits realisation audit
<b>Clinician engagement &amp; involvement</b>	Project structure awareness & involvement	Ongoing clinician resistance
<b>Awareness of benefits</b>	<b>Awareness of benefits</b>	Clinician use of the system
<b>Manager-clinician relationship</b>	The use of a formal benefits plan	Users not reverting To the old system
<b>Stakeholder analysis &amp; interests</b>	<u>Execution of change</u>	
Change planning	Customer-supplier relationship	
	<b>The use of an experienced project manager</b>	
	<b>Project leadership</b>	
	Co-ordination with other change initiatives	

There were two common weak areas across all the case studies:

1. Ineffective management of change (project factor). All organisations found that the management of change was difficult and that they lacked experienced staff in managing change. Even if the change was planned, its execution was poor. For example in the PACS project change that was close to the technology and its immediate use was planned and executed, but the project team failed to redesign the processes around the patient journey. This in turn limited the potential benefits that could be realised, such as the

effective use of the scarce specialist radiologist to support multiple organisations by assessing PACS digital images remotely. The theatre project was treated as a technology deployment only and very little attention was paid to the management of change. Finally, in the OCS project change management and process redesign took place at the hospital side but not at the GP practices. The ineffective management of the change meant that some inefficient processes remained in place that in turn limited the realisation of benefits.

2. Poor Benefits Management (post-project factor). The processes of benefits identification and benefits realisation were poor and there was no audit or assessment of the benefits realised. Benefits expectations were set by the government or pulled from the web and were not mapped to what could be realised practically in each organisation. Furthermore, the benefit plan was either missing or got shelved following the approval of the business case. Therefore the organisations were not measuring the identified benefits and not recording the new benefits that emerged during and after the implementation. The poor execution of change and the misconception that the successful deployment of the technology would result in the realisation of benefits negatively impacted benefits management (Markus and Benjamin, 1997).

The most significant differences between the two successful projects and the two less successful Theatre and OCS projects are summarised in table 6.

**Table 6 Main differences between the successful and less successful case studies**

<b>Successful Projects</b>	<b>Less successful projects</b>
<p><b>Business case (Pre-project factor)</b></p> <hr/> <p>More robust business cases that include a good level of detail and costing for key areas, including project management, training, communication, etc. Each business case was over a 150 pages long. The objectives of the investment, the strategic case, the financial case and the management case were clearly set out. There was also more rigour in assessing and approving the business cases. These business cases had to be approved by the trusts' boards, formally secure the support of the local primary care trust, and get discussed and approved by the Strategic Health Authority Capital Investment Committee.</p>	<p><b>Business case (Pre-project factor)</b></p> <hr/> <p>Both business cases were poor and lacked detail and costing of key areas such as project management, training, communication, etc. The OCS project BC was few pages long and the theatre project had a statement of need rather than a business case, which failed to set out the investment objectives. These business cases required the approval of the individual trusts' boards only.</p>
<p><b>Clinical engagement &amp; involvement (Pre-project factor)</b></p> <hr/> <p>Clinicians were fully involved and engaged. Clinicians were urging the organisation to invest in and implement this technology.</p>	<p><b>Clinical engagement &amp; involvement (Pre-project factor)</b></p> <hr/> <p>The theatre project had very poor clinical engagement. The consultants resented the use of the system. However the OCS project enjoyed a better clinical engagement and involvement but less than those of the PACS projects.</p>
<p><b>Stakeholder management including manager-clinician relationship (Pre-project factor)</b></p> <hr/> <p>Stakeholder management was effective. Clinicians' and managers' interests were aligned by these projects and the relationship between these groups did not suffer as a result of these projects. Managers' interests were met as there were considerable potential efficiency savings, and clinicians had a system that would improve the delivery of care to their patients and make their daily routines more effective.</p>	<p><b>Stakeholder Management including manager-clinician relationship (Pre-project factor)</b></p> <hr/> <p>Stakeholder management was ineffective in both projects. The theatre project failed to manage the interests of the consultants, resulting in the consultants boycotting the use of the system. The OCS project failed to manage a key stakeholder, the PCT, which allowed GPs to continue to use the paper system in conjunction with the electronic system. This limited the benefits that could be realised. In both projects the relationships between the key stakeholders have been negatively impacted.</p>
<p><b>Awareness and ownership of benefits (Pre-project and project factor)</b></p> <hr/> <p>The stakeholders were fully aware of the identified benefits and believed they could be delivered.</p>	<p><b>Awareness and ownership of benefits (Pre-project and project factor)</b></p> <hr/> <p>Although there was awareness of benefits, there was also lack of ownership of these benefits</p>
<p><b>Leadership &amp; use of experienced project managers (Project factor)</b></p> <hr/> <p>Effective, senior, stable and credible leadership in both projects. The project leadership in each project was complemented by a senior clinical champion and</p>	<p><b>Leadership and use of experienced project managers (Project factor)</b></p> <hr/> <p>The leadership was not stable, and was not very senior or credible. Both projects lacked clinical leadership and experienced project managers.</p>

<p>an experienced project manager.</p>	
<p><b>Use of the system (Post-project factor)</b></p> <hr/> <p>In both the PACS projects the organisations mandated everyone to use the new system and stop using the old paper-based system. This approach helped the organisations to realise more benefits and mandate new ways of working. However this was possible because first the projects were implemented within individual organisations, and that allowed these organisations to set and implement a new policy within their organisations, and second, the clinicians, who were the main users of the system, believed strongly that the new system would deliver benefits to them and their patients.</p>	<p><b>Use of the system (Post-project factor)</b></p> <hr/> <p>The use of the system was voluntary and never mandated. The reason for this was different in the different case studies. In the theatre project the organisation was not able to mandate the use of the system because it offered only a few indirect benefits to consultants, and the system lacked the required clinical functionality. The sponsoring organisation in the OCS project (the hospital), had little influence over the GP practices, and the one organisation that was capable of mandating the use of the system at GP practices was the PCT, which was not fully engaged in the project. However in the theatre project the use of the system increased in the second stage of the project, as the hospital started to understand the key processes at GP practices.</p>
<p><b>The deployed technology</b></p> <hr/> <p>The deployed technology (PACS) is fully integrated into the daily work of clinicians, and its use became inseparable from the clinicians daily routines.</p>	<p><b>The deployed technology</b></p> <hr/> <p>The deployed technologies, theatre and OCS, were not fully integrated into the clinicians' daily work. Clinicians were able to undertake their work without the use of the system and with no impact on quality or safety. The OCS technology offered improvement in quality but was still predominantly seen as an administrative rather than a clinical process.</p>

Table 6 highlights the main differences between the successful projects in P1 and the less successful projects in P2. The table also highlighted the categorisation of these factors (with the exception of the deployed technology) according to the project factors model that was developed in P1.

The majority of the factors in table 6 are pre-project factors. This indicates that the pre-project stage was not managed effectively in these projects and that negatively impacted the projects' outcomes. The organisations in P1 that implemented the PACS systems, received significant support from the NPfIT. They received, and were mandated to use, a more comprehensive business case structure, and furthermore they were asked to ensure that all the necessary details were populated in order for them to receive the "free system". Both organisations had good project managers that were complemented by further management resource from the NPfIT. This was not the case in the less successful projects in P2 as they had poor business cases that did not adhere to the NHS recommended standard. Both business cases in P2 were not subjected to external scrutiny from the SHAs, as the P1 business cases were. In addition, both projects in P2 were run by less experienced project managers.

The clinical engagement and involvement in the projects was significantly better in P1. This was due to the fact that the PACS projects in P1 were well publicised by the NPfIT, and that many clinicians, including some involved in the projects, had used this technology in other organisations and experienced the benefits. Therefore the clinicians understood the technology and believed in and owned the benefits, as they had been demonstrated to them in different settings. This was not the case in P2 projects where the technology, although used in other NHS organisations, had not been personally used by the clinicians involved in the projects.

Stakeholder management and the manager/clinician relationship were better in P1 in comparison to P2. This was due to fact that the P1 projects were centrally funded; therefore the issues around the resources that are the causes of many disagreements amongst stakeholders (particularly managers and clinicians) were removed. Furthermore, the interests of the managers and clinicians in the PACS projects were aligned and met.

Although funding issues for P2 projects were not significant, both projects were not resourced properly due to poor business cases that failed to identify all the cost areas. Furthermore, the interests of stakeholders were not fully considered. In the theatre project there was a clear division between managers and consultants, while in the OCS project the PCT interest were not considered. This area was significant in its impact on project outcomes as it was linked to stakeholders' behaviours and attitudes towards the projects, their level of involvement and engagement, and ultimately their use of the system.

The activities relating to awareness and ownership of benefits take place at different stages of the project life cycle. Benefits awareness is usually undertaken as a pre-project activity but could continue beyond this point, while benefits ownership starts at the pre-project stage but can also be part of benefits realisation that take place at the post-project stage. Benefits awareness was managed well across all the projects but

benefits ownership was managed well in P1 only. In the OCS project there was good benefits ownership on the hospital side but not at the GP practices. In the theatre project there was some benefits ownership by the management but not by the consultants. It can be reasonably argued that in P1 the organisations involved did not have to do much to raise awareness or encourage ownership. This was due to the fact that the level of awareness and ownership of the benefits for the PACS technology was well established across the NHS. This increased the use of the system, reduced the resistance, and ensured that stakeholders were genuinely involved.

Leadership and its impact were clearly demonstrated in these projects. In P1 there was effective leadership, but this was not the case in P2. In P1 the leadership was senior, stable and credible, and managed the stakeholder and project issues successfully. In P1 the leadership was provided by a senior Executive Director and the Lead Radiologist. The use of the system and the factors that have influenced the use of the system have been highlighted in table 6, and further discussed earlier in this section.

Finally the deployed technology is not part of the project factors model, but it had a significant impact on the projects' outcomes. The findings suggested that technology that is fully integrated into the daily working routines of staff is likely to be supported and used. This was the case in the PACS in P1, where clinicians were not able to treat their patients without the use of the PACS system. However, technologies that are partially integrated (e.g. OCS), or not integrated at all, will have high level of resistance and may not be fully adopted.

The categorisation of the areas in table 6 against the project factors model has helped to highlight that there were number of pre-project factors that were not managed effectively in the less successful projects. This should have indicated from the start that these projects would struggle and possibly underachieve, unless corrective actions were taken to reduce the impact on the projects outcomes, as was the case with the OCS project.

## 1.5 Learning from P1 and P2 and Discussion of the Implications

The four case studies have provided rich data about the implementation of successful and less successful projects. Analysing this data provided new insights into the many reasons for the varying levels of success in NHS IT enabled change projects.

### 1.5.1 The main findings from the four case studies

The main findings from the four case studies and the implications for improving the success of future IT investments in the NHS can be summarised as follows:

1. In its effort to deliver the various government targets, the NHS as a whole has been focused on the effectiveness of care provision, but not sufficiently on the efficiency of service delivery. NHS organisations in general have focused on delivering the targets only, ignoring the implications for resources and processes. This has led to many local short term workarounds, leaving the NHS riddled with inconsistent and inefficient processes, often causing wastage of resources and alienating key stakeholders such as clinicians. NHS organisations will continue to be under pressure to achieve various government targets and they therefore need to maintain the effective provision of care quality but also to deliver these targets through efficient, sustainable practices and processes. NHS organisations could use government targets as opportunities to innovate to improve their services, since the targets are usually associated with extra allocations of funds, and NHS organisations should not only focus on delivering the target but also on engaging their staff to improve their ways of working, both individually and collectively. The government, on the other hand, should ensure that NHS organisations' IT investments are not only focused on achieving the targets (e.g. the theatre project in P2) but also on improving some of the underlying processes that will result in long term increased levels of efficiency.

The NHS has not been at the cutting edge when it comes to the use of technology and this has hindered its progress in making effective use of IT to improve the quality of care and resource utilisation. Some reasons for this are:

- a. The NHS is dominated by clinicians, who are generally a conservative group of professionals who have resisted major step change (Armstrong, 1985). As a result, technology in the NHS has been through an evolutionary journey in which clinicians only supported small, incremental changes and resisted major transformational change.
- b. The NHS is dominated by a risk-averse culture that stems from the need to ensure patient safety. This culture has stifled innovation and new ways of working, as many clinicians have used the banner of patient safety in unjustified ways to stop the introduction of changes in working practices.
- c. The NHS is overwhelmed with bureaucracy in many of its processes, including procurement, recruitment, initiation and approval of projects, managing staff performance, general decision making, etc. This has again stifled innovation and deterred staff from participating and engaging in change initiatives, including IT projects.

2. Across many countries including the UK, the relationships between doctors and managers are strained (Davies, Hodges, and Rundall, 2003). In the NHS this has been one of the key causes of the lack of achievement of benefits from IT projects. There is a lack of trust amongst stakeholders and trust is a necessary requirement for achieving success, (Ashleigh and Nandhakumar, 2007). Fundamental differences in the priorities of these groups have made the doctors generally believe that the managers' first concern is resources, whereas the managers tend to believe that doctors' main concern is the patients in front of them. The reality is that both of these concerns need to be priorities in NHS organisations, and they need to be viewed as complementary, rather than competing priorities. An A&E consultant interviewed in P1 described how some clinicians view their role and the managers' role in the hospital. He stated that, *“There are a few who think that the managers are just here to save money and close the hospital, and we are here, knights in shining armour, to heal everyone and send them home safe and sound, and probably the reality is it's somewhere in the middle.”* Such issues can also apply in other service industries that have a strong professional identity, such as law firms or educational institutions. Generally success is likely to be achieved when the interests of all the stakeholders are identified and met, and the ineffective management of stakeholders has been identified as the second biggest cause of project failure (Nelson, 2007). Particularly in the NHS success is likely to be achieved when the interests of the managers and clinicians are aligned and satisfied, as was demonstrated by the PACS projects.
3. The training of new doctors and managers should prepare them to understand the different priorities that are required to run the NHS effectively and efficiently while continuing to deliver high quality care to patients. Doctors need to be trained to deliver care efficiently in order to help improve the health of the population and utilise the available resources appropriately, including available information to aid their decision making and to enable them to work with managers to plan the delivery of health care services. However, to date, medical school graduates, for example, still do not understand or appreciate the use of clinical terminologies “Read Codes” and “SNOMED CT”, that are used to document clinical diagnoses and procedures, but which also drive budget allocations and payment systems as well as provide the necessary information for clinical research. Such clinical terms have been in use in the NHS for decades, but the medical colleges have not adapted their training to address some of the practicalities of working in the NHS. At the same time, managers need to understand and appreciate that a doctor's mission is to provide the best possible care to patients and ignoring doctors' views is not the solution to successfully implementing new initiatives. There has to be a realisation that the delivery of high quality care requires input from both managers and doctors, and such understanding may help reduce the existing tension between these two professional groups in the NHS. Medical colleges should be prepared to adapt their training curriculum to equip doctors not only with the clinical skills but with the wider business knowledge that is now required to work effectively in the NHS.
4. Business cases have emerged as an important enabler to achieving success from IT enabled change projects. The quality of the business cases for IT projects in the NHS is weak (London capital investment unit, 2006). The business case



should set the foundation for the required investment, clarify the goals and objectives of the investment and demonstrate the linkage between the investments and organisations' business objectives. To achieve effective implementation it should also set out the expected benefits and the approach for achieving them, identify the required resources and motivate stakeholders and secure their commitment. The reality across the NHS is that business cases are developed to secure the board's approval for the proposed funding rather than to present all the information required to help achieve a successful outcome. The lack of rigour by organisations in developing and assessing business cases (Ward, Daniel & Peppard, 2008), has allowed weak business cases to continue to be a feature of IT investment in the NHS. Business cases are very important documents that impact project outcome and if they do not receive the required attention and scrutiny they will lead to projects that will struggle from the outset.

5. This research has identified three ways in which technologies get deployed in the NHS (and this is likely to be similar in other public sector and service firms). These three types are discussed in more details in section 1.6.2.
6. IT project leadership is an important area that impacts project outcome. Often, IT enabled change projects are perceived as technology projects only and are led by IT professionals. The reality is that such projects are usually a combination of technology and change implementations, and organisational leadership skills are required to manage the combined set of issues successfully. IT professionals often do not possess the wider business skills, credibility or influence to run such projects successfully. Therefore projects led by IT professionals are often technology focused and only realise the benefits that are closely related to the technology, rather than those across the entire business. NHS organisations should invest in developing their IT professionals to acquire wider business skills, understand the wider business objectives and processes in order to equip them with the skills to lead projects. Furthermore NHS organisations should allow more capable and credible clinicians, who may initially need training in project and programme management, to lead IT enabled change projects.
7. The NHS has focused on putting processes in place to deliver the various government targets and has neglected to invest in training its staff to manage change in order to unlock the realisation of benefits. It can be reasonably generalised that NHS organisations find change and benefits management difficult and they lack the necessary skills in managing them successfully. This feature is not limited to the NHS but is found across different industries. Therefore, in order to improve the success rate of IT enabled change projects, organisations should invest in change management training and embed a focus on benefits realisation into their cultures.
8. A structured approach to managing benefits in the NHS is lacking, and at best organisations refer back to the business case to assess whether the original list of intended benefits has been realised. However the benefits identification seems to stop at the business case level or the original benefits plan, which was usually developed at the early stages of the project. However, there are many benefits that get identified during the implementation and post "go live" and such benefits

often get ignored or are not managed at all. Therefore the NHS, and possibly other organisations, could be missing out on many potential benefits if they don't adopt a more dynamic and lasting approach to benefits identification and realisation.

Project outcomes are not static but go through three stages, expectation, identification and realisation. These stages are explained in more details in sections 1.6.3.1, 1.6.3.2 and 1.6.3.3.

Organisations should create the appropriate environment to encourage staff to identify and realise benefits they will obtain or can achieve, by having some of their requirements or interests satisfied as a result of the project. Therefore the "what's in it for me?" question should be answered if many of the benefits are to be realised and measured. However, in reality many NHS staff are fearful of measuring the realised benefits, because managers and departments may feel that they would be adversely impacted if they demonstrated that they had realised the intended benefits. This adverse impact is usually demonstrated in the form of a reduction in their allocation of financial and or staff resources. The culture and the operating environment in many NHS organisations have created negative consequences not only for failure but also for success. This has prevented staff and project teams from undertaking post-implementation reviews or benefits realisation audits. The Radiology Manager at Greater London Trust described her anxiety about auditing the benefits in her department. She explained that it wasn't in their interest to measure the achievement of benefits and share the outcome with the organisation. She said:

*It adds no value to my department and the way I run the service. And at the moment, it's great because the whole world wanted to know what our benefits realisation was so they could tick little boxes at national level and stuff. But it's not going to change the budget I get, it's not going to change the number of staff I get; if anything they'll try and take staff away from me if I tell them that we're being more efficient."*

There is also often confusion between benefits and changes, whereby the required changes are expressed as organisational benefits, leading to stakeholder resentment and lack of commitment, as the changes represent further work rather than direct benefits to them. Additionally, identifying benefits that meet stakeholders' expectations in inter-organisational projects in the NHS is complicated. NHS organisations may, at a high level have the same overall objectives, but they do have different priorities and they compete for resources. Therefore inter-organisational projects should identify benefits that recognise these competing priorities and explore areas which provide mutual or complementary benefits across the organisations.

9. Organisations have tended to treat the "go live" of a system as the end of the project. This is particularly so in the UK public sector, which has formally adopted the PRINCE2 project management methodology that treats the "go live" as the end of project and pays no attention to the post-implementation benefits management and realisation stage. However the reality is that the "go live" is

simply the start of the benefits realisation phase, which requires the user interaction with the new system and the use of the new processes (Marchand and Peppard, 2009). Failure to plan beyond go live has been a major limitation of IT enabled change projects which has negatively impacted their success and the potential benefits that could be realised.

10. The political nature of the NHS and the public sector as a whole has prevented organisations in these sectors from stopping failing projects early. Therefore failing projects are allowed to run much longer than they should be, wasting resources and alienating stakeholders. The public sector should encourage a culture of honest, objective assessment of project investments to ensure their continuing relevance and value of the expected outcomes, in order to allow organisations to stop or reappraise failing projects in a timely manner.

### **1.5.2 Contribution in the context of prior literature**

Examining the findings from the four case studies in the context of prior literature has helped to understand and elicit the academic contribution of this research. This contribution is summarised below:

1. The literature advocates that the management of change requires careful management of the context, content and processes (Pettigrew, Ferlie, and McKee, 1992). However the IT project management literature has often described “projects” in a generic way, without paying sufficient attention to their varied contents, processes and contexts. The main exception to this is studies of large, enterprise system implementations such as ERP (see for example Ignatiadis and Nandhakumar, 2007; Markus, Axline, Petrie, and Tanis, 2000). IT project management literature does pay attention to the content of the technology but not the types of business change associated with its implementation or the issues in the wider business context (NAO, 2006), e.g. the complex stakeholder relationships in the NHS. Although there is also a considerable body of literature on managing organisational change (Van de Ven and Poole, 1995; Balogun and Hope Hailey 2004; Tushman, Newman, and Romanelli, 1986; Davis, 2006), the IT enabled change literature that focuses on the management of the combination of organisational change and technology is limited. Building on that literature, a number of authors have proposed approaches and frameworks for managing IT enabled change projects (McKersie and Walton, 1991; Markus and Benjamin, 1997; Markus, 2004; Ward, Hemingway and Daniel, 2005). However, what is missing is the translation of the findings from the IT enabled change literature into a robust methodology or a model for managing IT enabled change projects for particular context such as the NHS. Existing project management methodologies, such as PRINCE2, have helped to get the technologies implemented successfully when applied correctly, but they pay little attention to the management of the associated, required business changes (Ward and Elvin, 1999). This has led to the lack of identification and the management of business change in IT projects, despite the fact that most of the potential benefits that could be derived from IT projects are dependent on managing the wider business change within the organisation. This research found that many IT projects in the NHS have

implemented technologies successfully but failed to get users to effectively use these technologies due to the lack of the management of the wider business change. It has confirmed the need for change management models and methods that address the combination of context, content and process, especially in IT enabled change projects.

2. “A great deal of time and money can be saved if we can learn from past experiences and alter our management practices going forward” (Nelson, 2007). Learning transfer is poor and the NHS is a prime example of an organisation that has not learnt from previous mistakes. This research has found evidence to support these findings in the theatre and the OCS projects but also found evidence that where previous learning was applied, projects achieved positive outcomes, as in the PACS implementations. The project factor model that was developed in this research is a useful tool that could be used to improve project outcomes by using previous learning. Although previous research has identified some factors that impact project outcome, this research expanded on this by showing that there is a combination of factors that need to be addressed to improve the potential outcome of IT enabled change projects. In addition, the approach and the activities associated with the different project factors should change at different stages of the project lifecycle. Therefore aspects of the project management such as stakeholder engagement should be adapted at different stages of the project lifecycle. This research also confirmed that despite the existing knowledge about many of the factors that influence IT project success, organisations are not applying sufficient scrutiny to their projects to ensure that these factors are considered and managed effectively (Gibson, 2003; Nelson, 2007). This research has confirmed many of the known factors that impact project outcome and identified new factors that are specific to the context of this research, but which could also be applicable in similar contexts such as other public sector organisations or professional service firms. In addition, it has developed a new model that analyses the impact of the project factors over the lifecycle of the project, which could aid resource estimation and planning, which is a key cause of project failure.
3. “The literature on project success factors has largely ignored the impact of the project manager, and his or her leadership style and competence, on project success” (Turner and Muller, 2005). This research has identified that presence of a project manager with the appropriate competencies is an important factor that contributes to project success. The project manager must be trained in managing projects according to a recognised methodology in order to improve project performance (Yetton, Martin, Sharma and Johnston, 2000). In addition they should possess wider business knowledge and skills, to avoid having the projects implemented without clear linkages to the wider business objectives. In the NHS this is not happening, largely due to project management not being recognised as a separate or even necessary discipline in many NHS organisations. As a result, organisations initiate projects, without qualified or experienced project managers due to a belief that everyone can manage projects and that the management of projects does not require any specific skill set. This research also identified a gap in the literature around the matching of the project manager capability and the project that needs to be managed.

4. There are various models that have been reviewed in the literature and applied to understand and interpret the extent of success or otherwise of the projects in this research. They have been useful in helping to explain the findings from the four case studies. However, these models have been either process driven (e.g. Nelson, 2005; DeLone and McLean, 2003) or stakeholder focussed (with some emphasis on business change and benefits) (e.g. Ward, Hemingway and Daniel, 2005; Boonstra, Boddy and Bell, 2008). Furthermore the DeLone and McLean model (2003) could not be applied to the OCS project due to the complexity of the stakeholders in this project that spanned different organisations. In addition, these models do not extend to review how effective the use of the system has been in realising benefits. They assume success by association rather than by measurement, i.e. if the system is used then value and benefits will be realised, without considering the need for the wider business changes. Combining these areas and extending these models to consider post-implementation review (Raelin, 2001; Newell, Brenson, Eldman, Scarbrough and Swan, 2006 ) and business change could enable more robust models to be developed, that are process, stakeholder and outcome driven, with sufficient focus on enabling change, to unlock the realisation of benefits. The post implementation reviews are important tools to enable organisations to learn, and hopefully use that learning to improve the success rate of future projects. This research has found that the way success is defined by the existing literature is incomplete, and suggested a different way for measuring success that could be researched further.

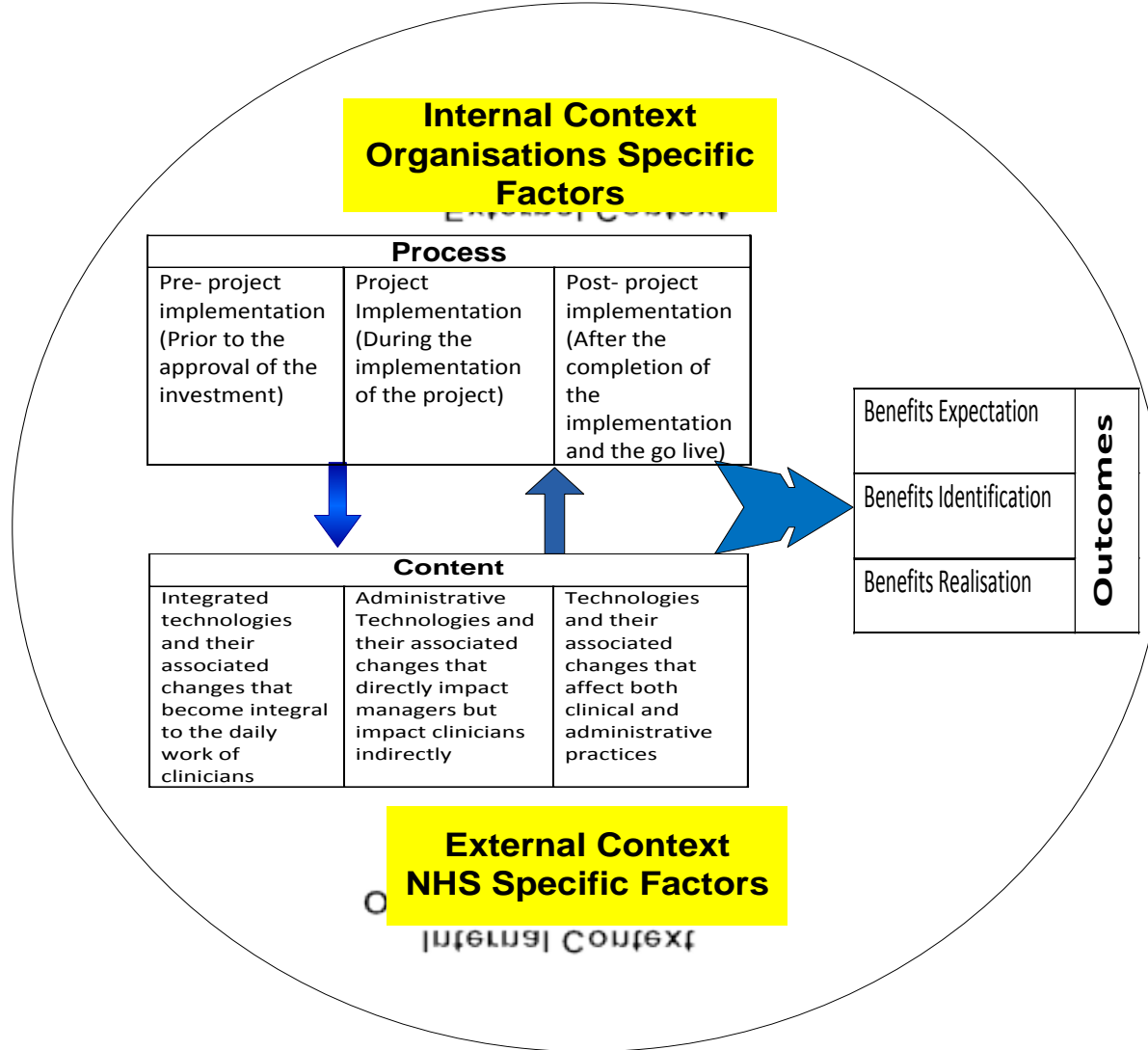
## **1.6 Summary of the Contributions**

This research identified significant learning points that were listed in section 1.5.1, and the contributions in the context of prior literature that were listed in section 1.5.2. In this section the overall contributions of this research are summarised and discussed.

1. The development of an expanded model (see fig 5) for managing IT enabled change projects in the NHS, derived from Pettigrew and Whipp's (1991) framework.
2. The development of the key components of a benefits management strategy for IT enabled change projects in the NHS.

The new model has contextualised the Pettigrew and Whipp model (1991) by segmenting the process and content dimensions so that they are more applicable to IT enabled change projects in the NHS, and by recognising that outcomes are dynamic and go through three distinct stages before they get realised. The model is discussed and explained below under its main headings: Context, Content, Outcome and Process. The three stage approach for managing outcomes is discussed and explained in following section.

Figure 5 A model for managing IT enabled change projects in the NHS



### **1.6.1 Context**

In this research the external context was found to have significant impact on both the content of the changes and the processes adopted, and hence the outcome of IT enabled change projects. Many examples have been used in this research to demonstrate this point. One is the NHS approach to imposing a set of benefits on projects without the engagement and endorsement of the key stakeholders of these projects. The benefits expected for the OCS project were those that had been identified centrally by Connecting for Health (CfH) without the involvement of the project stakeholders. These externally identified benefits failed to address the interests of a key stakeholder, the PCT, causing them to disengage from the project. Similarly, the development of a business case with pre-populated templates by CfH encouraged IT managers and CIOs to use such templates without engaging the stakeholders in the process of developing the business cases and building consensus about the achievable benefits. Another example is the setting and monitoring of targets for NHS organisations by the DoH that has led to constantly changing organisational priorities and made NHS organisations focus mainly on short term planning.

The internal context also has a significant impact on the process, the content and the outcome. Examples of such internal contextual factors include the relationship between the managers and clinicians, which is often tense and strained and which directly impacts technology adoption in the NHS. The diversity of stakeholders who have different interests and priorities that need to be satisfied can make coalition and consensus building more complex. Additionally NHS organisations often fail to consider the impact of IT projects on the wider organisation or other projects and initiatives within the organisation, leading to duplication of effort and resource wastage.

### **1.6.2 Content**

The content for this research, as explained earlier, was the deployed technologies plus the related enabling and consequential business and organisational changes needed to use the new technologies successfully. This research explained how the content can impact the project outcome by identifying three different categories of technologies, their roles and characteristics, the enabling changes needed to realise the available benefits. Based on this, alternative approaches are needed to manage their deployments. The three categories of technologies are:

- a. Technologies which are integral to the daily work of clinicians and the clinical processes of the organisation. It makes sense for such projects to be led or jointly led by clinicians, in order to understand the link between technology, clinical practice and the changes needed to adopt such technologies. Therefore clinicians are usually willing to participate in and lead such projects.
- b. Technologies (such as electronic administrative systems in the NHS) that impact managers and non-clinical staff directly, while only indirectly impacting clinicians. Such projects are often led by managers, but often this leads to limited or no involvement from clinicians. This is because the indirect benefits to clinicians and the wider benefits to the organisation are not clearly articulated and explained to clinicians.

- c. Technologies that affect both administrative and clinical practices directly. This last category is the most common, as the majority of the technologies that are used in the NHS have both clinical and administrative aspects that impact both managers and clinicians to different extents. In practice such projects are often led by IT, as managers recognise the clinical aspects of the projects require clinical input and hence feel uncomfortable about leading them, while clinicians see these projects as mainly administrative and not requiring clinical leadership. However neither of these two professional groups would allow the other to lead due to the strained relationship and the lack of trust that exists between them. Therefore such projects often default to IT to lead them. The result is that these projects become IT focused, alienating stakeholders such as clinicians, who want solutions to improve their daily work and the care they provide to patients. Furthermore, this third category of projects requires effective coalition building between stakeholders. In the NHS this usually means between the clinicians and the managers, and between different NHS organisations. This could be highlighted through an effective stakeholder analysis at an early stage of the project; however such activity is often not undertaken or not executed effectively. One example from this research is the Theatre project that failed to identify the stakeholders and their interests. This led to dissatisfied clinicians who did not use the system.

These findings indicate that if the technology is not integral to clinical practice, then clinicians' lack of interest, even resistance, should be anticipated and managed accordingly. In addition, they should help to explain the potential behaviours and attitudes of stakeholders and suggest that different types of technology projects require different management and implementation approaches. Finally, project teams could anticipate and plan for the work that is required to implement enabling changes associated with clinical engagement and ways of working. For example the outcomes of the Theatre project in this research would have been improved through better clinical engagement and participation. This could have been achieved through the implementation of the clinical functionality or by clearly articulating and explaining to clinicians the wider benefits to the organisation. In contrast, the PACS projects introduced technologies that were integral to the daily work of clinicians, who were therefore willing to lead these projects and change their ways of working. Therefore a better understanding of the content would help the stakeholders to design the necessary processes to implement not only the technologies but also the enabling changes that should lead to better outcomes.

### **1.6.3 Outcomes**

This is concerned with first defining and later realising the benefits to be obtained once the project is implemented, and requires the management of benefits in a systematic way. Each benefit should be defined in terms of where it will arise, the stakeholders that will benefit from it, who is responsible for its delivery, how it will be measured and when it should be achieved. Furthermore, the enabling changes for each benefit should also be defined in the same way. This dimension is shaped by the interplay between the other dimensions, as illustrated earlier by the business case example. Therefore effective management of the other dimensions will improve the project outcomes.



### **1.6.3.1 Benefits Expectations**

This research has identified that expectations of a project's outcome is not static but change at different stages of the project. Often at the pre-project stage there is an externally defined expectation of the benefits. In the NHS such expectations are often set out and imposed from the top, either through the DoH or through a national programme such as the NPfIT, leading often to expectations that do not take account of the reality on the ground. This can leave stakeholders frustrated when they realise they will be unable to meet these expectations. This was illustrated in the OCS project, where the expected benefits were identified by CfH. These expected benefits were not those that were eventually realised following the implementation of the project. In the OCS project this acceptance of centrally defined benefits led to the following problems:

1. Lack of commitment and ownership of the expected benefit, caused by stakeholders not being involved in the process of identifying benefits.
2. Unachievable expectations, caused by the anticipated benefits not taking into account the capabilities and resources available to the project.

Therefore benefits that have been identified externally should only be used as a starting point or as a guide.

### **1.6.3.2 Benefits Identification**

Benefits identification starts at the pre-project stage (prior to the approval of the business case) and continues during implementation. Benefits identification should be undertaken by stakeholders that are aware of the organisation's constraints, capabilities and resources but also the expectations that have been set out in the previous stage. However, in order to manage stakeholders' expectations and get all stakeholders to agree the new list of benefits, differences between the expected benefits and the identified benefits must be explained to stakeholders and project sponsors. This stage, if executed well, should result in:

1. A realistic and achievable list of benefits
2. Engaged stakeholders that understand and relate to the identified benefits

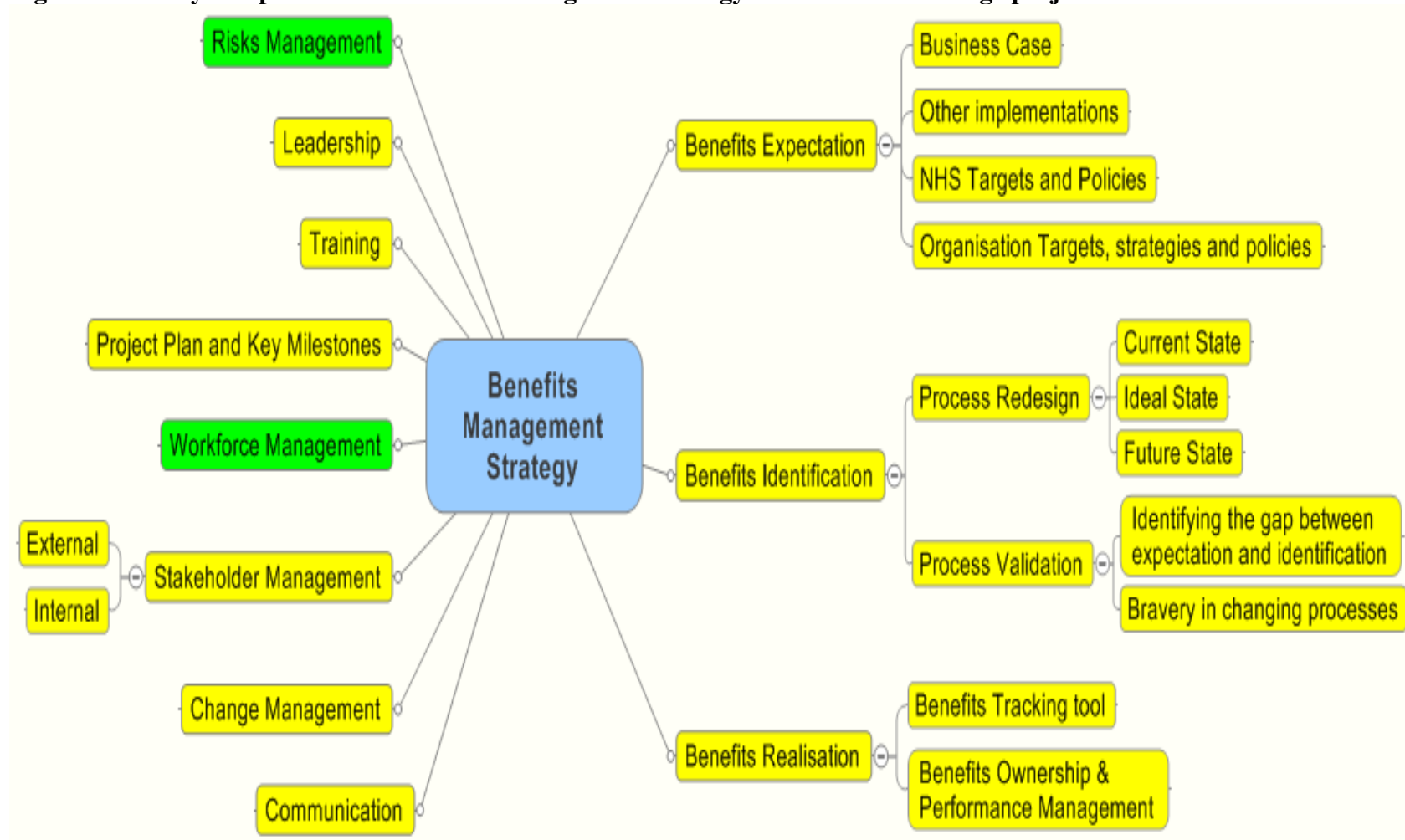
### **1.6.3.3 Benefits realisation**

Having an agreed list of benefits is a very important step towards their realisation. In order to realise the identified benefits, the timescales, the measures, the owners and the enabling changes for each benefit must be identified and recorded. Furthermore regular reviews and audits of benefits realisation must take place to ensure that benefits are realised as planned. Benefits realisation should not be confined to those involved in the management of the project; it must involve front line staff that will be impacted by the deployed technology and the enabling changes. One way of achieving this is to build the realisation of benefits into the daily activities of staff and monitor them through staff appraisal systems and organisation performance management systems.

#### **1.6.3.4 The components of benefits management strategy for IT enabled change projects in the NHS**

The three-stage approach for managing the outcomes that was discussed in the previous section has led to the development of a structure that identifies the key components of a benefits management strategy for IT enabled change projects in the NHS (see figure 6). The left-hand side of figure 6 represents the stages explained above, while the right-hand side represents the main themes that have been discussed in this research that could impact project outcomes, with the exceptions of workforce and (clinical) risk management, which have been discussed in more general terms and were added to this structure following discussions with staff at NE. Trust North East Trust.

**Figure 6 The key components of a benefits management strategy for IT enabled change projects in the NHS**



## 1.6.4 Process

The factor model in table 7 was developed in P1 and refined in P2 and in this linking document following further comparison of the findings from both these projects. The factors in this model were initially grounded in the literature and enhanced by the findings from this research. In order to address these factors successfully they must be underpinned by appropriate processes. Therefore the structure of the project factor model (pre-project, project and post project) was used to structure the process dimension.

**Table 7 A refined project factor model**

<b>Pre-Project Factors</b>	<b>Project Factors</b>	<b>Post-Project Factors</b>
Investment decision involvement & awareness	Effectiveness of the implementation approach	Changes in working practices
<b>Business case involvement &amp; awareness</b>	Communication sufficiency & variety	<u>Benefits realisation</u>
Initial clinician resistance	Training sufficiency & delivery Method	Benefits realisation audit
<b>Clinician engagement &amp; involvement</b>	Project structure awareness & involvement	Ongoing clinician resistance
<b>Benefits Awareness (Expectation)</b>	<b>Benefits Awareness (Identification)</b>	Clinician use of the system
<b>Manager-clinician relationship</b>	The use of a formal benefits plan	Users not reverting to the old system
<b>Stakeholder analysis &amp; interests</b>	<u>Execution of change</u>	
Change planning	Customer-supplier relationship	
	<b>The use of an experienced project manager</b>	
	<b>Project leadership</b>	
	Co-ordination with other change initiatives	

This three-stage structure of the project factors is helpful in aiding NHS organisations and project managers to understand when these factors need to be attended to and hence plan the necessary resources and actions to address them. This understanding is also important as it provides indicators to organisations or project teams about the potential outcomes of projects at the pre-project stage, hence prompting managers to intervene early and take the necessary actions to improve the project's chances of success. Similarly, organisations or project teams could act early to terminate a project if it becomes clear to them, during the pre-project stage or later, that this project is unlikely to succeed or deliver the benefits.

The project factor model can also be used to explain the interplay between the different project activities and their impact on project outcome. For example, if the process for developing the business case was managed effectively it would positively impact the engagement with stakeholders, improve the understanding of the success measures, define the benefits to the different stakeholder groups, determine the best

deployment model and gain ownership for the project aims, objectives and potential outcomes. The business case stage should be used to build stakeholder coalitions, by involving them in the development of the business case and identifying benefits that are relevant to them. In the OCS project, the PCT was not involved in the development of the business case and the identification of benefits as they were not recognised as an important stakeholder. As a result no benefits that were relevant to the PCT were included in the business case. This led to lack of engagement and commitment from the PCT which in turn significantly impacted the realisation of other benefits that were available from the project.

## **1.7 Implications of this research to NHS stakeholders**

### **1.7.1 For the DoH**

1. Doctors' training needs to include the understanding of the NHS and its objectives and particularly how NHS organisations function as business units. The role of doctors within NHS organisations needs to be broader than caring for patients and include supporting their organisations to achieve their goals and objectives. This would improve the relationship between clinicians and managers, which is crucial in order to improve the outcome of many initiatives.
2. The DoH should setup policies and initiatives to develop project management competence as a professional discipline. This would help to grow the number of professional project managers in the NHS, and would ensure that more projects are resourced with qualified and skilled project managers, which should positively impact the outcome of projects.

### **1.7.2 For NHS organisations**

1. The quality of business cases and the process of developing them have major impacts on project outcome. Therefore NHS organisations should increase business case scrutiny by getting business cases to be assessed by external experts and by using the process of developing cases as an opportunity to build knowledge, engage stakeholders and secure ownership to the identified benefits.
2. The management of change and benefits are important areas that impact project outcomes; however NHS staff often lack such management knowledge and skills. Therefore NHS organisations should invest in equipping their staff with such skills.
3. The relationship between the managers and clinicians has a direct impact on project outcomes; however such relationships are often strained in the NHS. Therefore NHS organisations must improve the trust, communication and respect between these two professional groups.
4. Clinicians' leadership of IT enabled change projects can positively impact the outcome of these projects; however they rarely lead such projects. Therefore

NHS organisations should encourage clinicians not just to be involved in such projects but also to lead them, particularly if such projects impact their daily work and processes.

### **1.7.3 For CIOs and IT Managers**

1. Many CIOs and IT managers in the NHS lack a comprehensive understanding of the business issues and requirements. Therefore if these CIOs and IT managers have to lead IT enabled change projects, they must acquire a wider set of business skills and improve their knowledge and understanding of their organisation's business objectives and capabilities, in order to gain the necessary engagement of key stakeholders.
2. CIOs, IT managers and leaders of IT enabled change projects must find effective ways of identifying and managing the benefits, such that the maximum value is achieved from the projects. The benefits management strategy components, with its three stages of managing benefits (see figure 6), has been proven to achieve this on a major Electronic Patient Record system.

## **1.8 Dissemination and Application of Findings to Date**

A key driver for this research is to contribute to practice, particularly to offer some learning and evidence to CIOs and organisations as a whole, to help them manage IT enabled change projects successfully. The reality of managing IT enabled change projects in the NHS has been studied in detail. This has highlighted the key areas that need to be addressed in order to improve the level of success of such projects. The findings from the four case studies provide CIOs, IT managers and organisations with new insights and guidance for achieving success when implementing IT enabled change projects.

The learning from this research helped the author in many ways, for example:

1. Developed and obtained approval for a strong business case for the implementation of a £30 million Electronic Patient Record (EPR) System at a NHS Trust. This investment represented the single biggest investment the organisation had undertaken. The Trust's Executives later agreed to the adoption of this business case structure and style across all other (non-IT) projects and investment programmes within the organisation.
2. Designed and ran a major process redesign phase with significant staff engagement to design new processes and identify the necessary change required and the potential benefits. This phase involved the running of 58 different workshops involving doctors, nurses, managers and administrative staff. This phase has helped the EPR programme to focus on the required change and benefits through effective staff engagement.

3. The development of an organisation-wide benefits management approach that consisted of:
  - a. The key components of a benefits management strategy that recognised how knowledge of the benefits develops over the investment lifecycle, from expectations that were often set centrally and expressed in the business case to more detailed identification and measurement of realisable benefits as implementation proceeds.
  - b. Benefits measurements templates, focused on identifying and describing the changes and activities required to deliver, measure and audit the benefits.
  - c. The development of an in-house software tool to automate the measurement and the auditing of benefits.
  - d. The commitment of the organisation to operationalise the realisation of benefits by making it part of the individual performance appraisal reviews of staff.

The author has also been keen to share the learning with practitioners worldwide. This has been achieved so far by:

1. The presentation of a paper detailing the findings of this research at the biggest UK healthcare computer conference and exhibition, The Health Informatics conference, sponsored by the British Computer Society at Harrogate in 2009. The presentation was very well received and generated many enquiries from various practitioners and academics across the country.
2. The publication of a paper in Hospital IT Europe (2009) that described the main findings from this research.
3. Presentation of the success factors and the key challenges facing IT projects in the NHS at the European CIO user group of Meditech EPR, Manchester, 2009.
4. The publication of a paper in the Association for Project Managers' magazine, that was presented to their benefits group conference and won the first prize for best postgraduate research 2010.

## **1.9 Limitations and Potential for Further Research**

### **1.9.1 Limitations**

The main limitations of this study are those inherent in interpretive, retrospective case studies. The author has mitigated some of those limitations by undertaking multiple case studies that each involved in-depth interviews of a stratified sample of ten or more participants involved in, or affected by, the projects and from different professional disciplines. The author also used multiple data sources including

business cases and project plans. This has provided rich set of data that has enabled the author to analyse and explain the findings within the context of the literature. However there are still a number of limitations related to this research. These include:

1. The total number of projects that were studied in this research was four: two successful projects and two that were less successful. In order to improve the generaliseability of the findings more case studies, with varying, but definable levels of success would be needed.
2. All the four case studies were undertaken within the NHS. Although some of the findings will be applicable to other public sector institutions, service firms, and possibly other industries, some of the findings may be less relevant or meaningful in other contexts.
3. The technologies involved in the projects that were studied in this research were mature and well established and therefore the findings may not be applicable when the projects involve new or relatively untried technologies.

### **1.9.2 Potential areas for further research**

Further research would be helpful in several areas.

1. The gaps between the definitions of the benefits at different stages of the benefits management process (benefit expectations, benefits identification and benefits realisation) and how they influence project outcomes is an area that requires further research. In particular how the benefit expectations are established and how the differences between the initial expectation and the eventual realisation is managed during the project lifecycle and the extent to which this influences the overall success of the project in terms of the benefits that could have been and were actually achieved.
2. The development of a more encompassing model of project success that combines the project management process, the stakeholder input and impact, the management of change and the outcome or benefits, would be very valuable to academic and practitioner alike. This could be linked to work to refine the project factor model so that it has a practical application in developing business cases and resource estimation.
3. The development of a clearer understanding of the clinical leadership role – both for project sponsorship and project management – is another area that requires further research; in particular how clinicians and managers can reconcile their differing perspectives to reduce the risk of failure of IT enabled change projects that impact both clinical practice and organisational performance.
4. The development of a model/framework that help to identify the competencies required by project managers for different types of projects.



## 1.10 Conclusion

How this research has addressed the research objectives and provided answers to the research question is summarised below.

### Research Objectives

1. *To identify the factors or combination of factors that have most influence on the benefits realised from IT projects in the NHS.*
2. *To identify the reasons for the recorded lack of benefits realisation of IT projects in the NHS.*

Objective 1 – This objective was met by studying four projects in different NHS organisations that had reported different levels of success. Analysing the outcomes of 43 interviews of stakeholders with diverse backgrounds, other documentation such as business cases, project plans and benefits plan and a review of the existing relevant literature, the key factors and combination of factors that impact project outcome and projects level of success have been identified. In addition the development of the project factor model has structured the factors that influence benefits realisation that facilitated the understanding of the interplay between these factors and their overall impact on benefits realisation.

Objective 2 – This objective was met by first understanding the factors that impact benefits realisation, secondly by comparing and contrasting the findings from the successful and the less successful projects, understanding how well each project has managed the factors that deemed to influence project outcomes (the results of which were illustrated by the Nvivo diagrams), and thirdly understanding how benefits are identified and managed before, during and after the implementation of projects in the NHS have enabled the identification of the reasons that limit or prevent benefits from being realised in the NHS.

### The Research Question

*How can the realisation of benefits from IT enabled change be improved across the NHS?*

Identifying combinations of factors that can be shown to influence benefits realisation revealed many of the underlying reasons for the lack of benefits realisation in the NHS. These new insights provided the basis for the development of a new model for managing IT enabled change projects in the NHS, plus the components of benefits management strategy with three distinct stages for managing project outcomes. These together provide new knowledge and tools for improving the realisation of benefits from IT enabled change projects in many NHS organisations.

## **Chapter 2 - Project One (P1)**

### **2.1 Executive Summary**

This document is project one of the DBA structure as illustrated in figure 7. The report is structured into executive summary, introduction, scoping study and literature review, methodology, data analysis, discussion and conclusion.

The initial research problem was identified and the research context was defined. The initial research problem is concerned with the lack of success of IT enabled change initiatives and projects across the NHS. The scope was defined as the National Health Service and was discussed in detailed. The scoping study had identified the key bodies of the literature that were examined in this project. They included: -

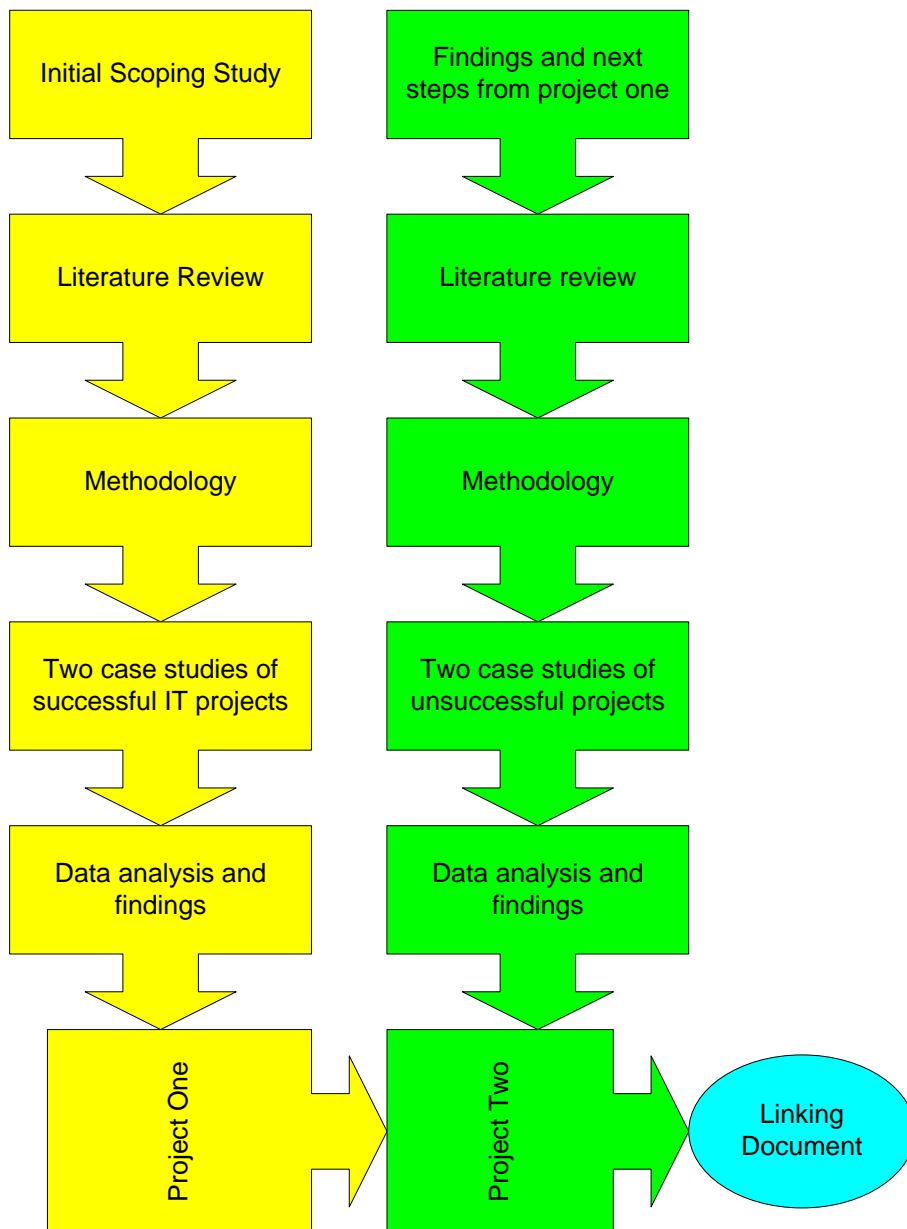
1. Information technology and organisations
2. Management of organisational change
3. Management of stakeholders' interests
4. Benefits realisation
5. Project success and failure

Various areas that could impact project success and the realisation of benefits have been identified from the literature. These areas were used to design and drive the data collection and data analysis strategy. A case study approach was used to undertake the empirical work. Two case studies were undertaken in two NHS organisations.

The findings from the two case studies were very similar, and indicating that there are number of areas that could impact project outcome and the realisation of benefits. A key finding from the case studies is that the use of a mature technology with proven benefits could improve the engagement and the commitment of different stakeholder groups. Finally and despite some of the limitations the systems that have been implemented and studied in these case studies were considered to be successful. The key factors that influenced the projects outcomes the realisation of benefits are:

1. The deployment of tried and tested technology, with a proven set of operational benefits.
2. The deployment of technologies that are integral to the daily work of clinical staff, whose jobs were directly improved by the introduction of the new technology.
3. The strong and stable senior leadership throughout the life of the projects.
4. Good working relationships between the clinicians and the managers, with mutual understanding of the core benefits, working together as a team to implement the projects.
5. The business cases (despite their limitations) contained sufficient details to identify the required resources to manage the projects successfully and received sufficient internal and external scrutiny before their approvals.

### **Figure 7 DBA outline structure**



## 2.2 Introduction

The research interest discussed here came from the author's work place, the National Health Service. The trigger for this interest was that many IT projects and initiatives in the NHS have failed, and that benefits or payoffs have not been realised. It was therefore desirable to understand and examine the reason for these phenomena and to contribute to existing knowledge in order to find alternative approaches to managing IT enabled change and realising benefits. One of the key areas that have been under researched in the NHS is the impact of competing interests of key stakeholders on enabling change and realising benefits. The tension between the interests of the clinicians and the administrators (managers, planners, etc.), the clinicians' engagement and their role in realising benefits in particular require closer attention. However

understanding how benefits can be effectively realised and how project become successful are the key drivers for this research.

In order to do this, five key bodies of literature that require exploration have been identified:

8. Organisational Change
9. Information Technology and Organisations
10. Benefits Realisation
11. Stakeholder management
12. Success and Failure of IT projects

Also, the NHS was examined as it provides the context for this research.

### **2.2.1 The Problem**

The National Health Service is the largest employer in Europe, a public sector and very complex organisation. According to the government review that was undertaken by Wanless in 2002, the NHS has not invested sufficiently in information technology. The projects that have been implemented across the NHS had limited success due to a variety of reasons including lack of resources, resistance to change by powerful professional groups, and lack of coherent strategy. The main management problem for the NHS is closing the gap between strategic intent and operational implementation (Pettigrew, McKee and Ferlie, 1988).

The NHS intentions for developing the NHS and equipping it with all the necessary technologies are not in question. However, as suggested above, these intentions do not translate into realities. Fundamental causes of the lack of successful information technology implementations across the NHS are that information technology projects have been considered and implemented in isolation from the rest of the business agenda and initiatives and, secondly, stakeholders' interests are not reconciled, leading to lack of clinical engagement in IT initiatives and poor ownership of the new solutions. The researcher's argument is that, if information technology projects are to succeed, the intended benefits must be realised. Understanding the various issues that relate to benefit realisation of IT enabled change and the key factors that contribute to project success, will be the focus for this research.

### **2.2.2 The NHS**

The National Health Service is a very complex organisation, the NHS complexity arises from:

- ◆ Different socialisation processes of the professions
- ◆ Different needs and expectations of a wide range of client groups
- ◆ Different histories of different institutions

- ◆ Local priorities, resource allocation and performance management. (Lles and Sutherland, 2001)

The NHS is characterised by three defining features: range and diversity of stakeholders; complex ownership and resourcing arrangements; and professional autonomy of many of its staff (Pollitt 1993; Dawson, 1999).

General Management was introduced to the NHS in 1984. This was due to the government's frustration with the level of performance, to bring a different perspective to managing the NHS and to import some of the management concepts from the commercial sector. The internal market was introduced to the NHS in the 1990s and has to some extent been re-established recently (McNulty, 2002). The government is pushing organisations to be managed more commercially, with greater focus on efficiency and productivity. NHS organisations, if managed well, will be rewarded by extra freedom and independence to run their own affairs away from central interventions.

The fundamental criticism of the NHS concerns the over centralised approach by the government to NHS planning and organisation. This has led to micromanagement of the NHS with governmental focus on the achievement of targets rather than the experience of patients. This system of 'command and control' and the setting of targets to manage the NHS and to deal with poor performance is inappropriate, as it does not take into account the complexity of networks and cultures of public service provision. More focus on learning from what works, better stakeholders' engagement, process improvement, fostering of innovation, evaluation and reflection represent a better approach to managing the NHS (Baggott, 2004; Hunter, 2000).

The accountability and control system within the NHS is unclear - this has presented several challenges to everyone involved, including clinicians, managers and the government. There are different types of accountability: firstly, there is managerial accountability of the NHS to the government; secondly, there is political accountability of government to parliament and the public; and thirdly, the clinical accountability of professionals to their professional bodies and the patients. Historically and still to a large extent today, ministers are responsible for health policies, but they have limited direct control over various implementation aspects of these policies. The medical professions, despite recent government efforts to curb their powers and influence in the NHS, have an effective veto over the implementation of various health policies. This has led to a tense relationship between the managers and the clinicians (Walsh and Smith, 2006; Baggott, 2004).

The allocation of resources across the NHS has also been a major challenge to managers and clinicians. In the past there were many perceived inequalities in the distribution of resources and many groups, such as the elderly, were disadvantaged. Improved allocation formulae that have been used in recent years, based on the health care needs of the population, have helped to reduce such inequalities. However, the major criticism of the resource allocation across the NHS is the focus on short term financial planning that has prevented health care organisations from developing and implementing long term plans to improve local services.

The Department of Health surveys of NHS investment in IT for the past several years have indicated that NHS organisations are only investing half of the government recommended level. The projects that have been implemented across the NHS had limited success due to a variety of reasons including lack of resources, resistance to change by powerful professional groups and lack of coherent strategy.

Inadequate knowledge, lack of involvement in health technology assessment processes and deficient management practices are cited as barriers to effective management of health technology in the health sector. However, a recent survey of NHS managers by the Audit Commission (2005) indicated that managers believe that the reasons for poor health technologies are lack of funding and resources, lack of capacity and managerial overload, but the survey report concluded that clinician resistance is more significant than funding.

After failing to implement the initial information for health strategy that was launched in 1998, that stipulated the creation of sector specific electronic patient records EPR (Acute hospital EPR, mental health EPR, etc.), the government launched its own enquiry to analyse and learn from this failure. This enquiry resulted in the publication of the Treasury Wanless Report in 2002 that suggested two main reasons for this: the lack of central IT standards and the lack of resources to deliver Information Technology (Wanless, 2002). In 2003 the government responded with the launch of the National Programme for Information Technology (NPfIT) and a £12 billion investment. The NPfIT overall aim is to create an integrated electronic patient health record for every patient in England and Wales. A few years later and the NPfIT has delivered very little and is currently struggling badly and facing crises in gaining the confidence, trust and commitment of NHS organisations.

A recent empirical study that collected and analysed data from four NHS trusts in relation to the implementation of the NPfIT, has highlighted a number of issues that could give an insight to the problems faced by the NPfIT. These issues include: multiple trusts site and change overload; communication with the NPfIT and lack of clinical engagement; financial deficit; performance rating (Trusts Chief Executive are focusing on meeting government short term targets that determines the trust overall star rating); loss of functionality and resistance from clinicians (Hendy, Reeves, Fulop, Masseria, 2005).

Managing stakeholders' interests has been recognised as an important factor that contributes to project success (Ward, Hemingway, Daniel, 2005). In the NHS clinicians are recognised as a very powerful and important stakeholder group. Clinicians in the NHS have competing priorities: on one hand they are part of NHS organisations and have to comply with the rules, regulations and work towards achieving the organisation targets and goals; and on the other hand they are part of powerful professional groups such as the royal colleges, General Medical Council, and British Medical Association. The aims and visions of the NHS and these professional bodies are not always the same. Understanding this tension and the role of clinicians in realising benefits of IT enabled change initiatives are important areas that have been examined in this research

### **2.2.3 Conclusion**

The main drivers for this research are the recorded lack of success and lack of benefits realisation in IT enabled change projects/initiatives in the NHS. These areas have informed the research objectives and the research question:

#### **Research objectives:**

1. To identify the factors or combination of factors that have most influence on the benefits realised from IT projects in the NHS
2. To identify the reasons for the recorded lack of benefits realisation of IT projects in the NHS

#### **The research question**

How can the realisation of benefits from IT enabled change be improved across the NHS?

The problem that has been identified in relation to the lack of success and the lack of benefits realisation together with the initial research question provided the focus required for the literature review that is discussed in the next chapter.

## **2.3 Literature Review**

### **2.3.1 Introduction**

In this chapter number of main areas together with their sub-areas have been reviewed, including

- ◆ Organisational Change
  - Pace of change and pace of implementation
  - Models of change
- ◆ Information technology and organisations
  - IT enabled change
- ◆ Benefits realisation
- ◆ Stakeholders' management
  - Clinicians and professionalism
- ◆ Success and failure of IT projects

The findings from reviewing the above areas formed the basis for designing the empirical work for project one.

### **2.3.2 Organisational Change**

“Organisational change can be defined from a theoretical perspective as a difference in the form, quality or condition of an organisation over time” (Van de Ven and Poole, 1995). “From a practical perspective organisational change can be defined as a demanding, difficult process requiring adaptation and effort” (McDonald, 2000).

There are three main perspectives on how organisations initiate and adopt change. One perspective suggests that organisations are flexible and able to adapt to changing circumstances more readily (Thompson, 1967). The second perspective suggests that organisations are inflexible and they view change as both difficult and hazardous (Hannan and Freeman, 1977; Freeman, 1984). The third perspective suggests that change can be a combination of the above two views - it can be disruptive and adaptive (Amburgey, Kelly and Barnett, 1993). Change is also described as revolutionary or evolutionary. Revolutionary change transforms the business and fundamentally changes the organisation property (rules and resources), while the evolutionary change is concerned with incremental change that builds or re-endorses the existing organisation structure (Balogun and Hope Hailey 2004; Tushman, Neman, and Romanelli, 1986).

The literature suggests that the pattern of change is that, after a period of step/transformational change, a period of equilibrium and incremental change will follow in order to keep the momentum of the transformational change going (Gersick 1991; Tranfield and Stuart, 1990; Tushman, Neman, and Romanelli, 1986). The punctuated equilibrium theory suggests during a period of equilibrium small organisational changes takes place - these are relatively long periods. However, these



periods of equilibrium are punctuated by a short period of transformational change (Tushman and Romanelli, 1985). “Case studies across a range of industries indicate that technological progress constitutes an evolutionary system punctuated by discontinuous change” (Tushman and Anderson, 1986). “Evidence from numerous case histories which reveals periods of substantial turbulence spaced between smoother periods of evolution”. The turbulent period is described as the revolutionary period, while the smoother period is described as the evolutionary period. During the evolutionary period only small adjustment and change would be required in order to maintain growth. (Greiner, 1972). Change is required whenever there is a misfit between the organisation structure, strategy, process, people and the environment. If this misfit is small, then only incremental change is required. However, if the misfit is large then a discontinuous change is needed (Tushman, Newman, and Romanelli, 1986). Transformational change is required to aid organisations that are lagging behind and have not kept pace with advancements in technology and industry development, and bring them up to speed. Discontinuous change is triggered by new comers to crises situations, system arrival at key temporal milestone (Gersick, 1991), or in response to changes in the environment. (Romanelli and Tushman, 1994)

The work of a number of researchers and academics in different domains all agrees that systems evolve through periods of equilibrium and revolutionary change (Abernathy and Utterback, 1982; Tushman and Anderson, 1986; Gersick 1991; Rosenkopf and Tushman, 1995). Two new dimensions were added to the punctuated equilibrium theory: the first is “Environment fit” whereby the fit between the organisation and the environment is tracked in order to ensure that the punctuated change is only taken when there is a large misfit between the organisation and the environment; the second dimension is the “trial period” whereby the change process is suspended after a given level of organisational change is undertaken - this period will protect the organisation from failure and helps it build the necessary competences (Sastry, 1997). The findings of six theorists in relation to the pattern of change are summarised below in Table 8.

**Table 8 Key discontinuous change theorists and their findings**

Author and Year	Area	Findings
Levinson, 1978	Individuals	The life structure evolves through a relatively orderly sequence of stable (structure building) periods, and transitional (structure changing) periods
Gersick, 1988	Groups	Teams progress in a pattern of punctuated equilibrium through alternating inertial change and revolution in the behaviours and themes through which they approach their work
Tushman and Romanelli, 1985	Organisations	Organisations evolve through convergent periods punctuated by strategic re-orientations which demark and set bearings for the next convergent period.
Kuhn, 1970	Scientific field	Most scientists spend almost all their time doing normal science which assumes that the scientific community knows what the world is like. Scientific revolutions which lead the professionals to a new basis for the practice of science are the tradition-shattering complements to the tradition-bound activity of normal science.
Gould, 1989	Biological species	Lineages change little during most of their history, but events of rapid speciation occasionally punctuate this tranquillity. Evolution is the differential survival and deployment of these punctuations.
Prigogine and Stengers, 1984	Grand theory	The historical path along which the system evolves is characterised by a succession of stable regions, where deterministic laws dominate, and for instable ones, near the bifurcation points, where the system can choose between or among more than one possible future.

Source: Gersick (1991)

There are, of course, other arguments apart from transformational/discontinuous change. The morphostatic or gradualist paradigm implies that a system can accept any change any time as long as it is small enough and that big changes result from the accumulation of small ones (Gersick, 1991). Similar arguments suggest that the introduction of Information Technology should be done in an evolutionary way which regards the system implementation as never finished. This approach also suggests a thorough user involvement and supports the bottom up and the emergent view of system design and implementation (Eason, 1982). In a turbulent environment, punctuated change would not be necessary - incremental change could be as effective and without all the disruption caused by punctuated change (Dean, Carlisle and Baden-Fuller, 1999). Brown and Eisenhardt (1997) describe organisations as dynamic and continuously changing and argue against the view of punctuated equilibrium or static organisations.

Across the NHS, the government introduces change through various health care policies and reform programmes. Various targets have been introduced through such policies. The targets may appear simple but, in order for them to be achieved successfully, far reaching organisational change is often necessary. Generally speaking, the NHS is poor at achieving the required organisational change to enable the targets to be implemented successfully and to be sustained. The policy makers seem blind to the complexities the changes require, both in the business processes and in the supporting ICT. They are very ignorant of what is happening on the ground. (Davis, 2006).

Externally imposed targets and structural changes (which are features of the NHS) have distracted senior managers from organisational change that would lead to clinical

service improvements. This has limited the NHS to undertake mainly incremental change rather than a transformational change. The interplay between key organisational factors such as the local context, people's role and inter-professional relationships have not been managed effectively - this has limited the NHS's ability and capacity to undertake transformational change. Furthermore the NHS in general has a risk-averse culture, to avoid compromising patients' safety. However this culture has limited innovation and transformational change from taking place. There are many change initiatives taking place simultaneously in NHS organisations, therefore effective management of change and co-ordination between the change initiatives to facilitate learning, sharing of resources and to avoid duplication of effort are critical to the success of these initiatives.

From the literature reviewed above, areas that impact the outcome of IT projects have been highlighted and will be assessed during the empirical case studies of project one. They include:

Changes in working practices that have resulted from implementing this project,  
The effectiveness of planning and executing these changes, and  
The co-ordination between the various change initiatives in the organisation.

### **2.3.2.1 Pace of change and Pace of implementation**

The research around the pacing of change is limited. The temporal pacing has been partially researched in individuals, groups and organisations. In groups, transitions are triggered by pacing, usually but not always, the midpoint in a project. This point is used to adjust the pace of change in order to meet the deadlines (Gersick, 1989). This means that groups persist with the same strategy until the midpoint where a sense of urgency becomes apparent that stimulates change. This finding is consistent with findings from research with individuals. Individuals tend to persist with a strategy even though it is not working. However, change can be stimulated by breaking the problems into sections (Luchins, 1940). There are close similarities between groups and organisations (Gersick, 1991). However, there are also differences: discontinuous change in groups is described as proactive, temporally predictable, while organisational discontinuous change is described as reactive and triggered by decline in performance (Tushman, Newman and Romanelli, 1986). Empirical studies into groups suggests that temporal pacing aids the planning process for change and also helps managers to decide between continuous and discontinuous change and their durations (Gersick, 1994). Pacing is also classified as internal and external. Internal pacing refers to the time based pacing described earlier. This type of pacing suits organisations with turbulent environments. External pacing is triggered by changes in the environment and is more suited to organisations with calmer environments (Sastry, 1997).

Pace is a critical dimension when studying change and the implementation of various projects/initiatives. However, there is limited research on the temporality, pace and time (Ancona, Goodman, Lawrence and Tushman, 2001; Avital, 2000). Temporal factors are often ignored or not incorporated into the research methodologies (Avital, 2000). The use of temporal perspective provides a new way of viewing phenomena

(Ancona, Goodman, Lawrence and Tushman, 2001). “The temporal perspective would also enable us to ask different questions and use different frameworks in the methodological aspects of research.” (Mitchell and James, 2001). Furthermore, temporality may improve social process research and may increase the coherence and congruity of the analysis (Avital, 2000). In order to understand pace, time and its various dimensions must be understood. Pace and time have not adequately been taken into account in research (George and Jones, 2000; Pettigrew, Woodman and Cameron, 2001). Time is an important factor in studying many phenomena such as decision making, learning, group interaction and technological adaptation (Gersick 1988, 1989; Tyre and Orlikowski, 1994). “Time and pace are closely linked. Appropriate timing of interventions depends in part on the pacing of that intervention.” (Huy, 2001).

Time can change the way theories are constructed, the relationships between the variables in a theory and the proposition that could be driven from the theories (George and Jones, 2000). A number of time dimensions have been identified: these include the nature of time, experience of time, flow of time, structure of time (continuous or discontinuous) and reference anchor (past, present and future) (Mosakowski and Earley 2000; George and Jones, 2000). In the context of change, time is viewed as quantitative or qualitative. “Quantitative time refers to clock time that can be measured easily and progressed linearly. Qualitative time is subject to different interpretations and cannot be measured easily (Sztompka, 1993). These dimensions aid the understanding of key parameters such as the rate of change, the duration of the change process and how a particular state is changed over time.

Temporal perception is useful for managers in four ways: first, matching time views to firm choices; second, matching time views to industry conditions; third, anticipating competitors strategic choices based on their different time views; fourth, using knowledge of current time views to change them (Mosakowski and Earley, 2000). Recently there has been more interest in studying time and its impact on change theories - this in turn has sparked interest in pace and the change processes (Gersick 1994; Kessler and Chakarabarti, 1996; Weick and Quinn, 1999).

Managers with a time paced approach develop a sense of what the future would be and take action to prepare them for it. These managers manage the change and the transitions more effectively than those who lack links to time, where the future for them is a surprise and the transition is chaotic (Brown and Eisenhardt, 1997). Managers, when dealing with a problem, consider whether to persevere with the current strategy or change. One of the tools that could aid managers in making that decision is temporal pacing (Gersick, 1994).

Research in group work indicates that temporal pacing could aid managers to predict and better manage change transitions. However, research on organisations’ re-orientation suggests that change transitions are not planned and are unpredictable. This would pose the question, “could the organisation’s reorientation be predictable and better managed through temporal pacing?” The role of time and pacing could play an important role in predicting and managing change and it is critical for organisations that need to decide between undertaking change and persisting with the current arrangement. Research on groups suggests that temporal pacing could influence such decisions. Pacing could regulate the speed and the intensity of the change effort. Furthermore,

managers could choose to clear milestones to pace their progress and to predict the work required against these milestones. If temporal pacing for organisational change works in similar ways as it did with groups, then change could be predicated and planned more effectively. It could also play an important role in determining the impact on the organisation strategy (Gersick, 1994).

To help determine the impact of temporal pacing on organisations, Gersick suggests that current theories have at least three archetypical patterns. First, managers could work hard and fast to accomplish tasks, changing their approach and strategy as and when required. In this situation temporal pacing is not applied. Second, the organisation could persist with its approach and strategy, making no fundamental changes - again, temporal pacing is not applied here. Third, the organisation could progress through stable periods punctuated by periods of intense change. This is the discontinuous change whereby the discontinuous change does not occur in regular intervals or in a planned way - instead they occur when the performance declines or external factors force the organisation to change. The use of temporal pacing could be useful tool here (Tushman, Newman and Romanelli, 1986).

Fast pace of change implementation (rapid change) and its impact on the change outcome is an interesting area that has not been explored. Managed rapid change is any change that helps a company to survive in the near future so that it can regroup and regain its health in the midterm, thus beginning to 'flower' towards its full potential further down the road (McDonald, 2000). Managing rapid change does not mean implementing change without proper planning, it means implementing change rapidly following the completion of the planning phase. Rapid change management is really no different than ongoing management except that the time is compressed, crises are magnified, and the penalties for wrong action or inaction are most severe in the short term. Many organisations have to consider managing rapid change due to a number of drivers including the globalisation move, technology developments, competition, etc. Too much too soon is better than too little too late. Dragging things out will defeat or at least dilute the most positive action (McDonald, 2000).

Tushman, Neman, and Romanelli (1986) argue that discontinuous change should be implemented rapidly for the following reasons: first, there will be a synergy within the new structure that will aid and provide reinforcement to the new change - resistance could grow and develop over time if discontinuous change is implemented slowly; a new environment is created when discontinuous change is implemented rapidly - this environment would encourage change, make difficult moves more acceptable and make change fashionable; and finally, a rapid implementation will reduce the period of uncertainty and get the organisation to a new steady state faster.

One of the aspects that were briefly examined in the literature was the link between punctuated change and temporal pacing. Combining these two areas would cause discontinuous change to occur proactively, more frequently and in accordance with predetermined milestones (Gersick, 1994).

The change agenda across the NHS is driven to a large extent by the political agenda. This has led to the introduction of various change initiatives with unrealistic

time scales. Senior managers across the NHS were not able to implement these change initiatives fully, review their outcomes or learn from their experience. A recent survey of NHS staff has found that 90% of respondents were alarmed by the pace of reform in the NHS (BMA, 2006). Although rapid change is required across the NHS in order to improve services faster and gain public confidence, realistic timescales must be set and lessons learnt must be highlighted and used for future change initiatives. Pace plays a crucial role in connecting the various change initiatives and making the entire change agenda more coherent. The following recent example from the NHS highlights the impact of pace across the NHS. The Choose and Book programme (C and B) is dependent on the electronic booking system being available (as well as various other process redesigns). However, the initial government target for C and B gave little regard to the NPfIT programme time scale and the implementation of the electronic booking system. In order to meet the government target, the electronic booking system was implemented without thorough testing of the product, resulting in many functional problems and increased resistance from the staff. If the government or the policy makers took notice of the timescale and the pace of developing and implementing the electronic booking system, many of these problems could have been avoided.

The issue of pace has to be carefully considered across the NHS at the policy/strategy level and the operational level. Pace impacts the completion of the change initiatives as well as the availability of the organisation's capability and capacity to undertake and successfully implement these change initiatives.

From the literature reviewed above, areas that impact the outcome of IT projects have been highlighted for exploration during the empirical case studies of project one. They include:

1. The type of implementation, rapid or gradual
2. The effectiveness of the implementation approach

### **2.3.2.2 Models of change**

In order to aid the understanding of change, the models that have been developed to explain change have been studied. One of the early change models suggested that there are three phases to the change process:

1. Unfreezing
  2. Moving
  3. Freezing
- (Lewin, 1952)

These stages have been described as initial equilibrium, transition and final equilibrium. Many models have been developed since then, looking at change from different perspectives. These modules and perspectives include work on bereavement, peoples' reaction to crises, people in transition, etc. (Kubler-Ross, 1969; Fink, 1967; Adams, 1976). Generally speaking, these modules could be grouped into the three phase change process that was developed by Lewin (1952). All the models also suggest

that the most difficult and turbulent phase is the transition phase. During this phase performance will deteriorate, therefore keeping the transition period as short as possible will help reduce the negative impact of this phase. This strengthens the evidence that Rapid implementation would help reduce the impact of the performance deterioration during the transition phase, and would enable organisations to arrive at the new equilibrium phase early. A summary of these change models is shown in Table 9.

Schein (1961) has expanded Lewin's model further. He argued that individuals should be prepared for change, as the majority of managers are not ready or able to change in the required way and therefore must be unfrozen before they are able to change (move as in Lewin's model). This can be accomplished either by increasing the pressure to change or by reducing some of the threats or resistance to change (Schein, 1961). There are other perspectives to Lewin's change model. Kegan (1994) proposed that organisations are in a constant unfreeze position as they are constantly going through change.

The three stage models provide a broader view of the key stages of change, however in order for change models to be applied across the NHS they have to be better defined. Isabella (1990) has developed a four stage model describing the assumptions and the cognition patterns of managers that unfold over time during the change process. These stages are anticipation, confirmation, culmination, and aftermath. Understanding the anticipation stage in particular would help organisations such as the NHS to understand and better manage how individuals deal with uncertainty, which is one of the most disruptive phases of the change process.

More recent work by Markus, Axline, and Petrie (2000), on Enterprise Resource Planning (ERP) packages, argued that there are four stages to change. These stages are Chartering, Project, Shakedown, and Onwards and Upwards. The chartering stage involves defining the goals and objectives for the change initiative - during the project stage the project team is formed, the software is configured and the system is implemented. The shakedown stage is concerned with restoring business performance after the implementation of the new system. Finally, the onwards and upwards stage deals with the ongoing operation of the business and the use of the system, as well as continuous improvement to business processes to achieve better business results. By breaking the change lifecycle into these four stages, they were able to empirically measure the activities during each stage, the problems that are incurred and the relevant success measures that are appropriate at each of these distinct stages. This work was further developed by Ward, Hemingway and Daniel (2005) to better understand how benefits are realised from IT investment.

These better defined models are more useful across the NHS particularly if they are developed further to take account of the NHS characteristics. However even in their current forms they provide a structure and framework for defining the change process, and some go even further by describing the associated activities with each stage, and the cognition patterns that is associated with the change process. Table 9 below shows a summary of the various change models.

From the literature reviewed so far, areas that impact the outcome of IT projects have already been identified in the previous section, however one further area that has been explored during the empirical studies is the implementation type, was the implementation undertaken in stages or in a big bang approach?



**Table 9 Summary of change models – Source Elrod and Tippett (2002)**

<b>Date</b>	<b>Source</b>	<b>Initial equilibrium</b>	<b>Transition</b>	<b>Final equilibrium</b>
1952	Lewin	Unfreezing	Moving	Refreezing
1961	Harvey, Hunt and Schroeder .	Unilateral Dependence	Negative Independence	Conditional dependence, Positive interdependence
1967	Fink	Shock	Defensive retreat	Acknowledgement, Adaptation, change
1969	Kubler-Ross	Denial	Anger, bargaining, Depression	Acceptance
1969	Adams	Dependence	Reaction or Rebellion	Coordination and Integration
1977	Elgin	Decline	Crisis, muddling through and procrastination, chaos	Back to basics, transformation and revitalization
1982	Lippitt	Shock	Defensive retreat	Acknowledgement, Adaptation, change
1989	Rashford and Coghlan	Denying	Dodging	Doing, sustaining
1990	Perlman and Takacs	Equilibrium, denial	Anger, bargaining, chaos, depression Resignation Resistance	Openness, readiness, re-emergence
1994	Reynolds	Denial		Exploration, commitment
1996	Bupp	Shock, denial	Anger, bargaining, Grief	Acceptance, exploration opportunity, accomplishment, creativity
1996	Grant	Shock/ immobilisation, denial/ minimisation	Depression/ incompetence	Acceptance/letting go, testing, search for meaning, integration
1996	Mariotti		(1) Confusion (2) Immediate criticism (3) Denial (4) Malicious compliance (5) Sabotage (6) Easy agreement (7) Deflection (8) Silence	
1993	Katzenbach and Smith	Working group	Pseudo-team	Potential team; real team; high-performing team
1994	Kegan	Unfreezing	Double-loop unfreezing	Triple-loop unfreezing, and so on

### 2.3.3 Information Technology and Organisations

The exploration of this area allows a better understanding of how information technology is constructed and how it interacts with organisations and staff. It also highlights the various facets of information technology and their characteristics.

Technology development and implementation must be introduced as a change management process and be integrated within the organisation's strategic and managerial framework (Bartoli and Hermel, 2004). In order to implement information technology as transformational change, its key aspects must be understood. Technology, in the past, has been viewed as an external force that has a deterministic impact on organisation structure (rules and resources). Recent research has considered the human aspect of technology and argues that human actions influence and shape the technology. Technology is created by human action and can only be given meaning by humans directly or indirectly. Similarly, technology can't determine social practice as humans are needed to enact the technology, however, it can condition social practice (Orlikowski, 1992).

Giddens (1984) argues that actors do not enact structures in vacuum, but that they draw on their knowledge (tacit and explicit) of the situation at hand and their prior actions, the facilities available to them and the norms that they subscribe to. All these determine the actor's actions.

The same principles apply to technology. If technology is to be implemented as transformational change it must be enacted to substantially alter the way things are done. It should transform the status quo (Tyre and Orlikowski, 1994). Orlikowski (1992) has applied Giddens's structuration theory to technology and developed the duality of technology concept. The duality of technology concept argues that technology is used as a medium to undertaking activities, therefore it is used as an enabler. However, because of its structure and properties, technology has to be used in a certain way - this way technology is seen as a strainer. Technology is usually constructed by one organisation and used by another; therefore only one aspect of the duality is seen or experienced. Finally, technology impacts the organisation's resources and it is impacted by the organisation as the staff shape the technology over time to better meet their needs and requirements.

A different view on the duality of technology was explored by Zuboff (1985). She argued that the two faces of technology are Automate and Informate. The technology can be used to automate work operations, however this process simultaneously generates information about the underlying processes that could be used to improve these processes. The links between the technological change and the wider organisational change were also highlighted as the organisational innovations are required in order for the technological innovation to succeed and benefits to be realised. More recent research by McAfee (2006), argues that information technologies would be better understood and implemented more effectively if they are dealt with according to their type or category. Here information technology is described as having three distinct categories:

1. Functional IT that is used for managing stand alone tasks, such as word processors and spreadsheets.
2. Network IT, a technology that enables people to communicate with each other - this includes email, instant messaging, etc. This type of technology gives people the freedom to experiment rather than dictate to them how they should communicate.
3. Enterprise IT, a technology that is used to restructure the interaction among various groups of employees or stakeholders - this includes CRM, ERP, etc. This type of technology is usually imposed on the organisation through a top down approach.

Each category of information technology requires a different implementation approach and different types of interventions (McAfee, 2006). This research allows us to tailor the introduction, implementation and adoption approaches in accordance with the category of the chosen Information technology.

The above literature helps us to understand the problems encountered by the NHS when implementing information technology projects. For example the current major IT programme across the NHS (NPfIT) has struggled to deliver so far. Some of the problems encountered by the programme are due to the fact that the same intervention approach is adopted by the programme to implement different types of technologies, such as infrastructure, PACS, etc. Furthermore the programme has placed most of the emphasis on managing the suppliers and the development of the technology, with little attention been paid to the business change agenda, and stakeholders role in shaping the technology. To a large extent the programme has treated the technology as an external deterministic force that impacts organisations

### **2.3.3.1 IT Enabled Change**

IT-enabled change is different from normal change: it creates unique issues for managers, such as how to integrate technology, business processes and the organisation to achieve the desired outcome (Benjamin and Levinson, 1993; Yetton, Johnson and Craig, 1994). Many IT projects and initiatives fail and do not achieve their desired outcome. Various examples have been cited in the USA, Australia and the UK (Carlopio, 1998; Wilkinson, Redman, Marchington, 1998; Zbaracki, 1998; Burnes, 1996; Dunphy and Stace, 1993). There is recognition that IT plays an important role in organisational change and is seen as an enabler, but IT cannot create organisational change by itself (McKersie and Walton, 1991; Markus and Benjamin, 1997).

In general, the reason for failure is the lack of focus on the management of change, and is not related to the feasibility or the reliability of the technology (Gardner and Ash, 2003; Benjamin and Levinson, 1993). If the reasons for failure are examined in more detail, it is found that poor adoption and implementation practices are one of the contributors to failure (Gardner and Ash, 2003). Furthermore, problems are often “the result of either a lack of common understanding of the purposes of change or different perspectives on how to achieve them successfully” (Swanson and Ramiller, 1997). Across the public sector, IT project failure has been caused due to the fact that

delivery of information technology projects is not set in the context of delivering wider business change, and the business cases of such projects are often concerned with the introduction of the new IT system rather than the entire change needed. However, the public sector, including the NHS, has had success in managing some IT projects, such as the millennium bug - this was achieved by wider business continuity planning and management. This approach ensured that the new IT is compatible and that continuation of service remains the top priority (Cabinet Office, 2000).

Users are key players in making or breaking IT-enabled change initiatives and their role is usually underestimated. They are experts in finding faults with the best technologies, their objectives could be different from those of executives, and they may use the new technology without realising the intended benefits. Users also could fight back and undermine the use and integration of the new technology in the organisation. (Markus and Benjamin, 1997). Lack of understanding of the users in the NHS, who are key stakeholders, is one of the reasons for failure of IT enabled change initiatives. The clinicians across the NHS are very powerful players, and many change initiatives only succeed if supported by clinicians. Therefore, a better understanding of the clinicians' role, their influence and their behaviour will provide insight into key factors that could enhance the chances of success and ultimately the realisation of benefits from IT enabled change initiatives.

Many IT enabled change initiatives across the NHS start with the premise that the new technology will improve ways of working and enhance performance, without paying attention to clinicians' involvement and process redesign. The magic bullet concept (technologists develop robust technology and shoot it at the problem and expect it to resolve it, create the required change and penetrate the users just like a magic bullet), if adopted, will contribute to the failure of IT-enabled change initiatives. Believing that IT will create the required change is a misconception. Another reason for IT-enabled change failure is that such projects are introduced and managed by a small group of IT practitioners and some executives, however, successful change initiatives should be part of everyone's role. Therefore, assigning the responsibility for complex change to a single group is a recipe for failure (Markus and Benjamin, 1997). Some executives hide behind technology to introduce organisational change in order to avoid direct confrontation with the key challenges facing the organisation, and to be able to blame the technology if the change initiative fails. This problem relates to the lack of clarity of the role of technology in the change process and it is another reason for failure. Shared understanding of the role of technology is needed within the change management and strategy process (Remenyi and Sherwood-Smith, 1999). The NHS continues to focus on the technology with little consideration to key stakeholders such as the clinicians or the wider business change. This has been demonstrated by the approach adopted by the NPfIT, with the main focus on developing the technology and managing the suppliers only.

The chances of success of IT-enabled change can be improved by paying enough attention to managing the change and not only the technology. This was examined further and it was found that combining change management techniques with technology implementation, understanding the change dynamics at the people/technology interface, and understanding the relationships between technology,

change and the organisation are keys to improving the success rate of IT-enabled change (Gardner and Ash, 2003; Markus and Benjamin, 1997; Orlikowski and Hofman, 1997). Benjamin and Levinson (1993) have developed eight principles that would improve the management of IT-enabled change: “Develop a systematic process for change; manage equilibrium and mutual adaptation of organisational technology and business processes; determine whether there is enough energy for change; analyse the size of the change effort; analyse and manage stakeholders’ commitment; major change require champions – know what one does; prototype organisational response; and build change reviews into the management process.”

IT-enabled business transformation is determined by the degree of which the change is integrated into the organisation. There are two distinct levels of IT-enabled transformation. The first is the evolutionary level - at this level change integration into the business is limited and therefore the degree of business transformation and the benefits realised are low.

The second level is the revolutionary level where the change involves business process redesign, business network redesign and business scope redefinition. At this level the degree of business transformation and the benefits realised are high. (Venkatraman, 1994). Peppard and Ward (2005) suggest that successful IT enabled change implementation happens in a two phase approach. The first phase entails establishing a clear link between the business future vision and how IT enabled change shapes this vision. The second phase focuses on innovation in selected processes and activities. The distinction between the problem based approach and the innovation based approach to implementing IT enabled change is a very important one, as each of these approaches starts from a different premise and have different aims. The problem based approach is undertaken to overcome an existing problem, while the innovation based approach is undertaken to exploit a business opportunity and do something new. Across the NHS currently, professionals struggle to access up to date, relevant information about patients. They are experiencing daily problems about lost or multiple patients’ medical records, out of date information, etc. Therefore a problem based approach to introducing IT enabled change to start with would improve the level of engagement particularly amongst doctors as they would see that current problems could be resolved. If implemented successfully this could reduce the level of scepticism about IT enabled change projects and their ability to help doctors provide improved care to patients, further more this could led to improved support to innovative initiatives in the future.

The NPfIT promised a fully integrated patient record that would be available in the distant future without dealing with immediate problems faced by NHS organisations and doctors in their daily practice. This is one of the reasons behind the lack of engagement of clinicians in the national programme for IT.

The improvisational change model that was developed by Orlikowski and Hofman (1997) suggests that IT-enabled change should be managed in an improvised rather than prescribed manner. “IT-enabled change managers should begin with an objective rather than a plan, and respond to conditions as they arise in an adhoc fashion.” (Macredie and Sandon, 1999).

There are many reasons for the failure of IT enabled change initiatives, as indicated earlier. However, managing the change effectively and understanding the relationship between the technology and change are key success factors. The literature does not explore in sufficient detail the nature and the shape of the relationship that needs to exist between the technology and change to ensure the success of IT enabled change initiatives. Further research is required in this area.

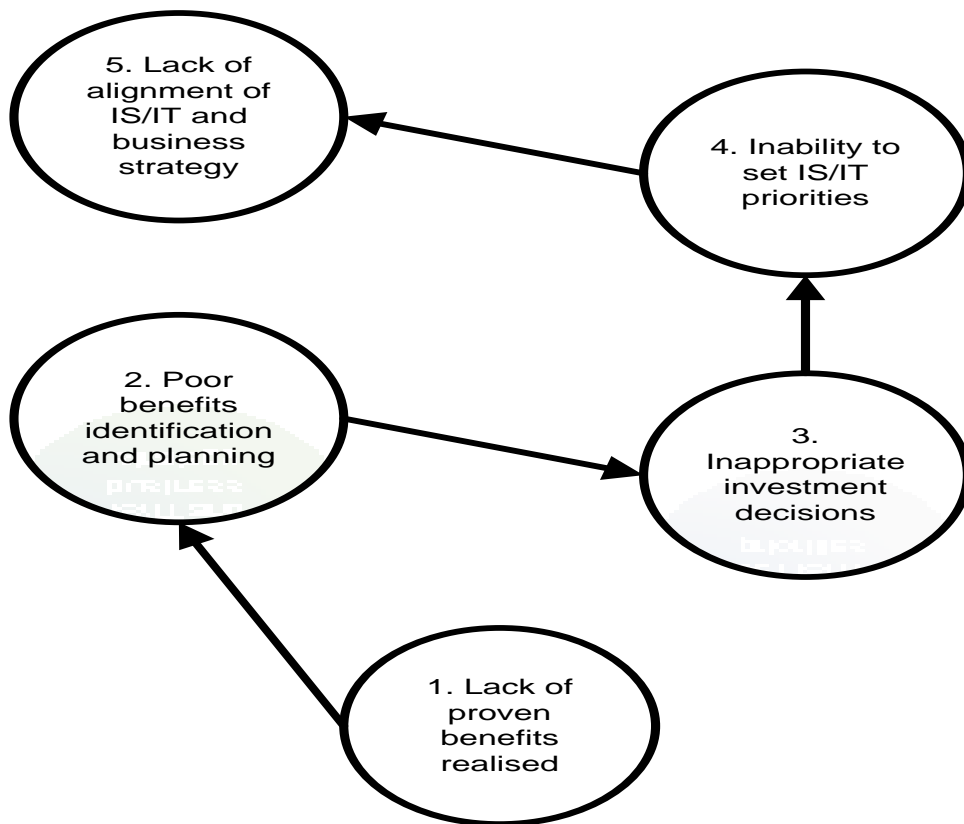
Using the reviewed literature, the areas that could impact the project outcome have been identified. These areas are examined and discussed during the empirical study. They include:

- a. The perception of the project as a technology or a change project
- b. The project leadership
- c. The clinicians' engagement and involvement
- d. User satisfaction

#### **2.3.4 Benefit Realisation and IT Payoffs**

One of the weak areas relating to IT investment is the exploitation of the technology and the utilisation of benefits. London capital investment unit (2006) has identified the benefit realisations plans as the weakest part of the various IT investment business cases across the NHS. "The lack of ability to deliver benefits reduces the organisational understanding of the business value that IT can provide" (Ward and Daniel, 2006). This leads to poor investment choices, inability to identify linkages between IT and performance, and, finally, the formation of strategies that do not exploit the opportunities available from new IT investment or the threats presented from competitors that deploy IT solutions. The implication of poor benefits management is clearly illustrated in the figure 8, below.

**Figure 8 the implication of poor benefits management (Source Ward and Daniel, 2006)**



IT enabled change initiatives can only be successful if the intended benefits are realised. Most of the difficulties in realising the benefits stem from the lack of clarity at the start about the intended benefits, the ability to track and record these benefits, and ultimately deliver them. There are three ways to realising benefits from IT investment: stop doing activities, doing the same but better and doing completely new things (Peppard and Ward, 2005).

The literature in the areas of benefits realisations and IT payoffs has in general addressed three questions: What is measured? How is it measured? and Where is it measured? (Banker, Rajvivi, Kauffman and Mahmood, 1993; Berger, 1988; Mahmood and Sczewczak, 1999). However there are great variations in how each of these questions was addressed. In addressing the question of ‘what is measured?’, studies used different variables to measure benefits and IT payoffs. The measures are two types - profitability measures and productivity measures. Willcocks and Lester (1997) used quality improvements as their measure to determine the IT payoffs, Anderson, Furnell and Rust (1997) used customer satisfaction as the organisation variable, and Hendrick and Singhal (1997) used costs, sales and assets as the organisational variables. This illustrates the complexity of measuring benefits as the different types of measures used have different impacts on IT payoffs (Devaraj and Kohli, 2000).

In addressing the question ‘how is it measured?’, studies used different methods, different intervals, and different frequency and data sources to collect data. Prattipati and Mensah (1997) gathered data at one point in time, however Barua, Kriebel and Mukhopadhyay (1995); Dewan and Min (1997) and Hitt and Brynjolfsson (1996) collected data three to five times a year. The source of the data varies also. Smith and McKeen (1993) and Mukhopadhyay, Rajiv and Srinivasan (1997) used the firm directly to obtain the data, while Hitt and Brynjolfsson (1996) and Dewan and Min (1997) used data from a third party. The source of the data, the frequency of the data collection and the sample size have an impact on the IT payoffs. In general, the larger the size of the sample, the more frequent data collection and the closer the data collected to the data source, the better the IT payoffs (Devaraj and Kohli, 2000).

Finally, in addressing the third question, ‘where is it measured?’, studies were carried out across different industries each with different characteristics. They showed that IT payoffs are harder to measure in one industry than others (Kohli and Devaraj, 2003). All these variations have an impact on realising the benefits from IT investments.

There are other factors that impact the realisation of benefits from IT investments. Most IT enabled change implementations have been dominated by technology without paying sufficient attention to the management of change. Ward and Elvin (1999) concluded from their three year study into benefit realisation from IT investment that “change management activity was usually instigated when the IT component was delivered, in a reactive rather than a proactive mode”.

Across the public sector and including the NHS, similar issues were experienced. The cabinet office review of IT projects (2000) concluded that some of the reasons for not realising benefits across the public sector include the lack of post implementation reviews that enable the monitoring of the outcomes against the business objectives, and the necessary reviews and reporting of the benefits realised. Evidence shows that only 16 per cent of IT initiatives across the public sector document and record quantitative benefits from such initiatives. The lack of an agreed list of benefits at the start of the project or programme, supported and agreed by key stakeholders, was another reason for failing to realise the benefits.

Another important factor that needs to be considered when examining benefit realisation from IT investment is the concept of ‘fit’ or ‘match’. Various studies point out that ensuring a match between the IT investment and the required organisational change is a key factor to realising benefits (Devaraj and Kohli, 2000; Drazin and Van de Ven, 1985; Venkatraman, 1989). The concept of fit is a key theme in the contingency theory that proposes the performance of an organisation is the result of a match between factors. This means that benefit realisation from IT investment is dependent on organisation process change that needs to accompany the IT investment. However, in order to understand the concept of fit, it is necessary to understand the contingency theory and the different types of perspectives on fit. The contingency theory is different from other theories in the specific form of propositions. The congruent proposition has simple unconditional association between variables. For example, increased use of IT leads to better skilled workforce, whereby the contingent proposition has a more



complex association between two or more independent variables with a dependent outcome. For example, IT interacts with BPR to improve organisation performance.

Across the NHS there are many change initiatives happening simultaneously. In order for IT enabled change to succeed, they must be implemented in harmony with other business initiatives. Making the necessary links between IT enabled change and the wider business objectives will help identify the key benefits that must be achieved in order to realise the necessary improvements and enhancements to the wider business. However, many IT enabled change initiatives have been dominated by IT and, led by IT staff, paid little attention to the underpinning changes required in business processes or the wider impact on stakeholders. In particular, the role of the clinicians in realising benefits from IT enabled change has not been understood or fully exploited. This has resulted in many clinicians resisting the IT enabled change initiatives or playing a passive role in the implementation and benefit realisation.

A recent example from the NHS is the introduction of the Choose and Book programme. The programme's overall aim is to provide choice to patients in selecting the venue, the time and the clinicians that will provide hospital care for them. This is a major project that impacts on the day to day activities of general practitioners, hospital consultants and administrators as well as IT staff. For many years, the programme was focused on the delivery of the technical solution (the C and B software) with little regard for the major process redesign that had to take place. Despite the potential benefits to patients, to the operation of the hospitals and GPs, the project was resisted by many clinicians. The GPs felt that the new system would slow their surgery down and force them to reduce the number of patients that they could see. Hospital consultants felt that they were losing control over their clinics, as GPs were able to book appointments with hospital consultants directly without referring to them. The administrators, such as those staff responsible for making the bookings at the hospital, felt that their jobs were under threat as this process would be automated, hence removing the need for manual bookings. These legitimate concerns have not been fully understood or addressed and, as a result, the C and B project was delayed and struggled until recently, only after a concerted effort was made to deal with the wider change required enabling such a project to succeed. The author believes that mistakes and shortcomings of IT enabled change projects are not well articulated or well publicised, however even when some lessons learnt reports are produced very few organisations use them and learn from them. This has led to the same mistakes been made repeatedly.

In contingency theory, performance depends on fit between organisation context, structure and process. Drazin and Van de Ven (1985) identified three different interpretations of fit: Selection approach, Interaction approach and the System approach. Studies that adopt the first two approaches tend to focus on interactions and relationships between single factors, however, the system approach addresses simultaneously a variety of factors in a more holistic way. There is limited literature on understanding and determining how 'fit' between IT enabled change and the organisational change can be achieved.

Due to the complexity of measuring, assessing and realising benefits from IT investments, research in this area has not been conclusive on the question of whether or

not IT investment leads to improved organisational performance or payoffs. However, there are a number of studies that concluded that increased IT investment led to deterioration in organisation performance. For example, productivity declined in the 1970s despite increased investment in IT (Baily, 1986). Similar patterns were also identified between 1970s and the 1990s (Roach, 1987). On the other hand, there are number of studies that conclude that significant payoffs have been realised from IT investment. A larger study of 12 Asian Pacific countries over a 6 year period in the 1980s found that productivity, as well as GDP, recorded growth due to increases in IT investment (Kramer and Dedrick, 1994). Various other studies found similar conclusions (Kelly, 1994; Strassman, 1990, 1985). Finally, some studies found that there is no impact on organisation performance as a result of increased IT investment, despite recording improvements in intermediate factors such as improvements in communications (Dudley and Lesserre, 1989; Barua, Kriebel, and Mukhopadhyay, 1995).

Following the review of the literature, there is no conclusive evidence to support or disprove the proposition that assumes IT investment will bring benefits and improvements in an organisation's performance. There are a number of conditions and factors that need to exist in order to have a positive correlation between the IT investment and payoffs. Furthermore, evidence from the NHS suggests that IT projects continue to fail due to the lack of attention to the wider business change or the adoption of a systematic approach to realising benefits. The role of key stakeholders, such as clinicians, in realising benefits needs to be better understood.

Using the reviewed literature, the areas that could impact the project outcome have been identified for detailed examination during the empirical study. They include:

1. Awareness of the benefits
2. Realisation of benefits
3. Measurements of benefits
4. Benefits planning
5. Change and benefits realisation

### **2.3.5 Management of Stakeholders' Interests**

Stakeholders have a major role to play in supporting and implementing organisational change. There are many classifications of stakeholders, however, generally they are classified as internal and external to the organisation. Stakeholders come from the word stake, which is defined as the interest or the share in an undertaking (Carroll, 1989), and stakeholder is defined as "any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organisation" (Freeman, 1984; Greenley and Foxall, 1998; Scott and Lane, 2000).

Stakeholders have diverse interests, and these interests could be competing interests, that have to be managed by appropriate relational strategies in order to secure the support of the stakeholders to organisational change initiatives. Failure to consider and address these different interests could lead to failure of the implementation of the

change initiatives or affect their success (Ward, Hemingway, and Daniel, 2005; Byrson, 1998). The health service has a diverse and complex set of stakeholders. Internally there has always been the tension and conflict of interest between the clinicians and administrators. The clinicians are focused on delivering patient care and complying with best practice as defined by their professional bodies, such as the various royal colleges, the British Medical Association, etc. as in the UK health care system. However the administrators, beside their focus on patient care, have different pressures and priority interest in satisfying the government and meeting its various political and economic targets. This tension between the interests of the clinicians and the administrators has an impact on the outcome of the various change initiatives.

A survey of clinicians and managers across 197 trusts found that doctors and managers are often dissatisfied with the doctor/manager relationships (Davies, Hodges, and Rundall, 2003). Davies and Harrison (2003) describe the differences between managers and clinicians as cultural divergence and suggest that a better understanding of the professional journey of doctors could provide a better understanding of their behaviour. The NHS has recognised this divergence and responded by involving more clinicians in management. For example, the creation of the medical director role was one of the approaches to involve more clinicians in management and reconcile the difference in interests with other groups. However this approach made little impact, and doctors in these positions have experienced considerable tension in attempting to reconcile their two divergent professional roles.

Three different perspectives have emerged from the literature on managing stakeholders. The first is supported by the agency theory which was founded in the financial economic field. This perspective supports a strong control approach - it advocates that agents' (managers) behaviours and actions must be controlled and aligned with those of the owners of the organisation (Eisenhardt, 1989; Hawley and Williams, 1996). The down side of this overemphasis on control is the creation of distrust (Ghoshal and Moran, 1996). The second perspective is supported by the stewardship theory that was founded in the social psychology field. This theory proposes that managers are good stewards of the organisation and they work to achieve high profit and stakeholders' returns on investment. It advocates a more collaborative approach to managing stakeholders (Davis, Schoorman and Donaldson, 1997). However this approach could lead to reduced scrutiny of decision making, leading in turn to a reputation of making mistakes (Sundaramurthy and Lewis, 2003). The third perspective found its root in the Stakeholder theory (Freeman, 1984). In this theory the categorisation of stakeholders was not as simple as owners and managers, but as a sophisticated network with complex inter-relationships. This broader view of stakeholders has led to the conclusion that stakeholders are specific to organisations (Berman, Wicks, Kotha, and Jones, 1999). Tan, Pan and Lim (2005) suggested that organisations should not pursue the extreme approaches of pure control or unconditional collaboration in managing stakeholders' interests, but find the balance between the different expectations of stakeholders and the wider organisation or community.

Different perspectives of explaining stakeholder's behaviour have also emerged from the Information Systems theories. System rationalism perspective suggests that stakeholders work to maximise efficiency and effectiveness of the organisation through

the use of technology. The segmented institutionalism perspective suggests that stakeholders are pursuing their own interests even at the expense of the organisation (Kling, 1980). The trust-based rationalism perspective suggests that stakeholders collaborate with one another to seek gain based on a relationship of trust (Kumar van Dissel and Bielli, 1998). Ward, Hemingway and Daniel (2005) have explored the literature of negotiations between stakeholders with different interests to describe approaches to managing stakeholders. They have used the dispute resolution framework (Ury, Brett and Goldberg, 1993) to reconcile the interests of different stakeholders. The framework proposes three approaches:

Power based - various forms of power are used to get stakeholders to agree to a particular option. This approach leads to a win-lose situation

Interest based - stakeholders' interests are considered to create value for everyone. This approach leads to a win-win situation

Rights based - different interests are dealt with through legal or legislative methods. This approach leads to a win-lose situation.

Each of these approaches could be effective in certain circumstances. A key management skill in managing stakeholders' interests is to know when to use a particular approach.

Ward, Hemingway, and Daniel (2005) have produced a framework that combines the three perspectives of stakeholders' behaviours with the three approaches of resolving conflicts between groups. The new framework was used in various empirical studies to determine the best management approach to managing stakeholders' interests and behaviour in order to maximise the realisation of benefits from IT enabled change initiatives.

Having considered the literature in this area, it was found that there are still gaps in managing stakeholders' interests in the health service, particularly on reconciling the competing priorities of the clinicians. A number of questions have not been addressed by the existing literature, including the reasons why some clinicians endorse, support and actively participate in a particular organisational change initiative such as IT enabled change, while other members of that stakeholder group oppose or do not engage in such initiatives. The author proposes to address this area in their research in order to understand the reason for the lack of engagement of clinicians in IT enabled change and their role in realising benefits.

Using the reviewed literature, the areas that could impact the project outcome have been identified. They include:

1. Stakeholder representation on the project management structure
2. Stakeholder involvement in the initial decision making process
3. Customer supplier relationship

### 2.3.5.1 Clinicians and professionalism

A key stakeholder and user of IT enabled change projects across the NHS is the doctor. This section will examine issues relating to professionalism and understanding doctors resistance to change.

In the NHS the superior/ subordinate relationship is complicated by the professionalism. Due to the introduction of general management in the NHS in the 1980s the superior is likely to be a manager with no medical background, they treat health as a service that can be managed like any other service. The subordinate is usually a professional such as a doctor whose ethos and focus are on patient care. These differences explain the tense relationship, the misunderstanding and in some case the lack of trust between these groups. (McCartney, Brown and Bell, 1993)

Doctors are professionals like lawyers, accountants, engineers, they have strong professional identity and ideology which was formed over long period of education and training. They have specialist knowledge that is not available to non medical professionals, this knowledge provides them with a source of power. Evetts (1999) defines the profession as a largely autonomous, self regulating and self perpetuating institution. One of the key characteristics of doctors is their autonomy from the state and the management. This characteristic is key to understanding the tension between doctors and managers, and the doctors resistant to change. This autonomy is been given to them by the state and the society in return for self regulation, proper conduct and for putting patient interests before their professional interest. This autonomy has given doctors power, elite professional status, social status and prestige. (Dent, 1995, 1999; Friedson, 1998; Worthington, 2004). This arrangement or configuration has become somewhat dysfunctional and has to be addressed. Serious issues relating to the running of the NHS organisations, their efficiency and their overall performance as a business unit have emerged. The configuration of most NHS organisations is professional where by the dominant force is the proficiency (workforce with high skills, knowledge that work independently) In the NHS this arrangement has led to the contamination of efficiency by proficiency (Mintzberg, 1991). Doctors have resisted changes to this arrangement as they felt that their power and status will be eroded.

Many attempts by the state have been made to change the existing culture in the NHS, however such attempts and initiatives have led to increased stress and feelings of alienation by doctors. Even recent attempt to introduce power sharing arrangements between doctors and managers have had similar outcomes. (NHS confederation, 2002, 2003). In order for change to succeed key players such as doctors have to understand the intended and potential benefits to them as a result of the change. The domain theory (Kouzes and Mico, 1979) helps us understand some of the reasons for doctors' resistance to change. The theory focuses on the differences in assumptions and attitudes of professionals/doctors and managers, it describes these two groups as two different domains that have co-existed in the NHS. Any attempt by one domain to expand their power and influence into the other domain will be resisted. Doctors also resist change as they perceive any new accountability arrangement would threaten their expertise (Armstrong, 1985). For example the introduction of rigid clinical guidelines such as the

National Service Frameworks across the NHS could impact their positional power as they would be labelled as followers rather than experts in their field.

Literature on professional service firms (“those whose primary assets are a highly educated workforce and whose outputs are intangible services encoded with complex knowledge”) (Greenwood, Li, and Deephouse, 2005) also explore key characteristics of professionals and argue that such organisations should be treated differently from other industry sectors such as manufacturing.

The author argues that clear demonstration of benefits to doctors and patients will reduce the resistance by doctors to change. A better understanding of the doctors journey, ethos and value system would also help the formulation of better policies that would not threaten doctors role in the NHS. Doctors are key players in the NHS and they undertake and manage the core activities of the NHS, therefore they should be part of the solution rather than the problem and they should be engaged in managing the NHS resources as well as treating patients.

In summary, the areas that could impact the project outcome have been identified. They include:

1. Clinicians / managers relationship
2. Clinicians engagement and involvement
3. Clinicians changing their ways of working

### **2.3.6 Success and failure of information technology investment/projects**

There are different definitions of success and failure associated with information technology investments and projects. Thong and Chee-Sing (1996) defined project success as the extent to which it contributes to achieving organizational goals. Computer failure is seen as problems that can occur again and again (Dalglish, 2000; Sauer, 1993). Large scale systems failures can include systems that are never commissioned because the work is never completed. (Fincham, 2002). Lyytinen and Hirschheim (1987), classified failures into three categories, failure to meet objectives, failure to meet outcomes and failures in the use of the system. Another variety of failure has moved away from technical failure to strategic failure relating more to organizational management and issues (Mitev, 1994; Sauer and Burton, 1999). Another definition comes from the IS development research where failure was defined as the “perceived inability of the IS development project to meet the requirements or expectations of the various combinations of organizational stakeholders” (Ewusi-Mensah and Przasnyski, 1994).

Fincham (2002) summarized the different perspectives that have emerged from examining success and failure. His summary is presented in the table 10 below, that partly follows Sauer (1999).

**Table 10 Perspectives of success and failure**

Perspective	Form of organizational behaviour and action	Methodological focus	Success and failure seen as
Rationalist	Organisational goals; managerial and organizational structures	Simple cause and effect	Objectives and polarized states
Process	Organisational and socio political processes	Socio technical interaction	Outcomes of organizational processes
Narrative	Organisational and socio-political processes; symbolic action; themes; plots; stories	Interpretation and sense making; rhetoric and persuasion	Social construct, paradigms

Fincham (2002) has also highlighted the limitations of these perspectives. He explained that the rationalist view links the success to management control and failure to lack of control, but his own research did not support such views. He sees that the process model provides better explanation of project success and failure and it is closer to the narrative approach than the rationalist perspective.

Ewusi-Mensah and Przanyski (1991) in their research into project abandonment, examined economic, technological and organizational factors, and found that organizational factors are the main factors behind project abandonment. However they have also concluded that project abandonment may be a consequence of project failure, is a “multi dimensional, or multi faceted issue with different interacting parts. As to which of these several factors potentially is capable of contributing to the abandonment problem may dominate depends to a great extent on the particular organizational and IS environments” (Ewusi-Mensah and Przanyski, 1991). Ewusi-Mensah and Przanyski (1994) listed various factors that correlated with project failure, including Lack of senior management support, lack of user participation, vague project goals, lax project management and escalating cost and timescales. Project success was correlated with success in these factors. Krauth (1999) argued that project failures are due to one or more of the following reasons:

“ Insufficient awareness of organizational issues;  
insufficient involvement of users;  
inadequate training of users; and  
poor alignment of IT adoption to the business strategy”. (Krauth, 1999)

There are several models of project success: Nelson (2005) and DeLone and McLean (1992, 2003), are well known examples of such models. The latter has dominated the literature of success and failure and has been adopted, validated and modified by other researchers (e.g. Seddon, 1997; Kulkarni, Ravindran and Freez, 2006).

Nelson’s model (2005) is shown in figure 9. The overarching measure of success in this model is stakeholder satisfaction and the model is divided into two key areas, process and outcome. Each area has three different aspects. The three aspects of the

process area are time, product and cost, and the three aspects of the outcome area are learning, use and value. Success is measured against these six aspects and according to this model a successful project should demonstrate the following:

1. The project came on schedule,
2. The project was delivered on budget
3. The product is of acceptable quality
4. The product improved stakeholders' knowledge and prepare the organisation for future challenges
5. The product is used by its target users
6. Value: the project has resulted in measurable improvement in efficiency or effectiveness

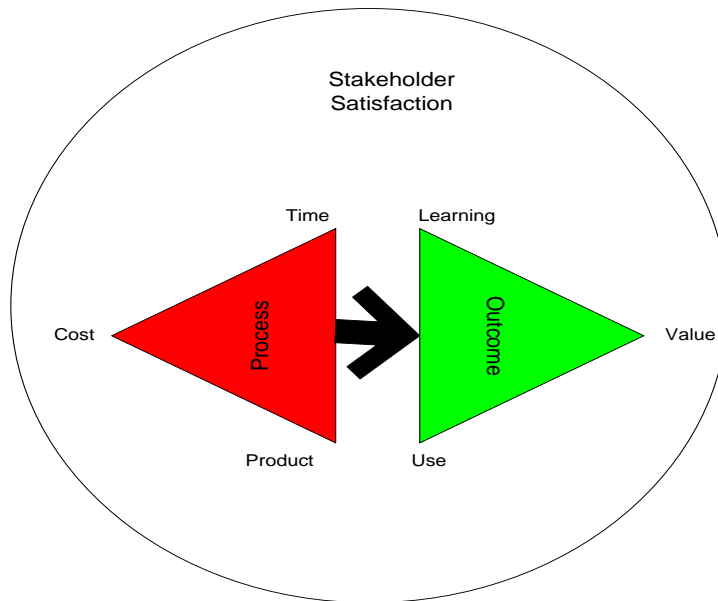
The last of these needs to be expanded in the context of the NHS where not only organisational efficiency and effectiveness need to be measured, but also proven improvements in the quality of care and patient outcomes have to be achieved by most systems investments. In the new environment of patient choice, improvements to the 'patient experience' are also now important.

Nelson (2005) also identified that different stakeholder groups measure success differently, for example the key criteria of success for project manager is time, however for project sponsor and top management was value. Interestingly, 'learning' was not included in the top three criteria by any of the stakeholders.

In the PACS projects that are discussed in chapter two, it was clear that there are processes other than those identified in this model that have to be in place, including, for example, change management, communications, training, etc. which determine the outcome in terms of the benefits realised. However, this model is relevant to the NHS and may help explain the reasons for not fully realising the some of the benefits of IT projects in the NHS.



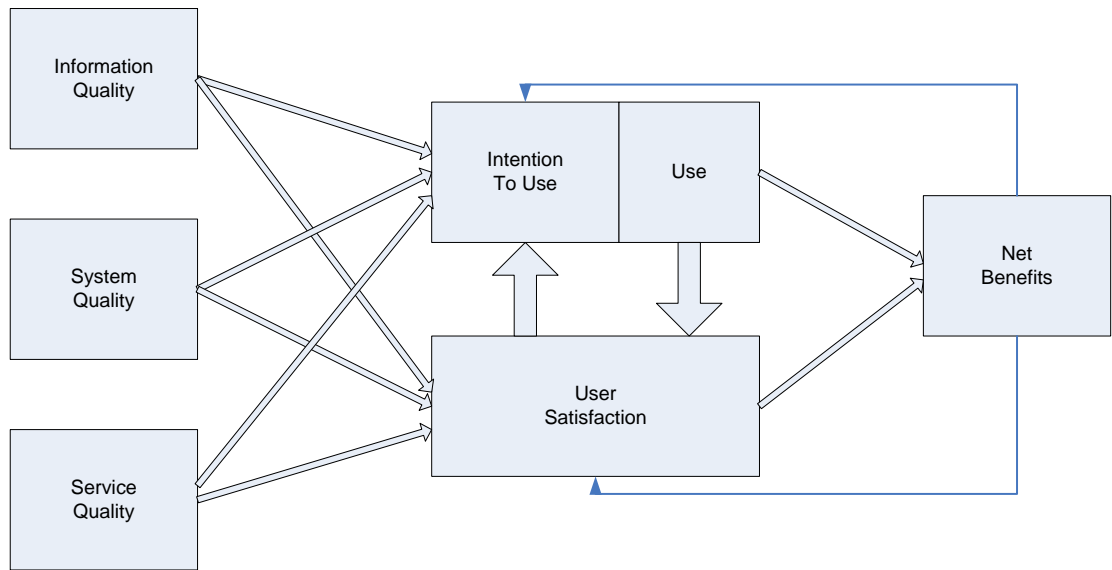
**Figure 9 Nelson's (2005) success model**



DeLone and McLean's (2003) model (see figure 10) has its focus on net benefits which is widely recognised as a key measure of success. The model has three stages. The first stage is based on the quality of information, system and service delivered by the project, the second stage is focused on use and user satisfaction (user focused) and the third stage considers the net benefits. DeLone and McLean (2003) suggested that the three aspects of stage one individually or collectively will affect use and user satisfaction, which in turn will lead to the delivery of certain net benefits. They also explained the feedback loops in their model from the perspective of the owner or the sponsor of the system. They suggested that if the net benefits are positive, use and user satisfaction will be improved, and if the net benefits are negative then the use and the intention to use of the system will decrease.

By applying DeLone and McLean's (2005) model to the two PACS projects that are discussed in chapter two, it was found that the first two stages have been achieved, but the available benefits have not been fully realised. This suggests that achieving the first two stages do not necessarily lead to the achievement of the all the benefits and that other factors can influence their realisation.

**Figure 10 DeLone and McLean's (2003) success model**



Petter, DeLone and McLean (2008), undertook a comprehensive literature review covering publications on IS success between 1992 and 2007. They found that many studies have validated some areas of their IS success model. One study that was highlighted by them as significant was that by Sedra, Gable and Chan (2004). This study validated four dimensions of the original DeLone and McLean model. They identified several sub measures for each of the four areas (system quality, information quality, individual impact and organisational impact). For example, they identified nine sub measures for system quality (ease of use; ease of learning; user requirements; system features; system accuracy; flexibility; sophistication; integration and customisation). Therefore, this study made the main four measures more meaningful and measurable and also addressed business process change and defined this aspect in more detailed.

Both models (DeLone and McLean, 2003; Nelson, 2005) are not explicit about the implications of business changes to exploit the system and the affect on the benefits realised.

As it is clear from the reviewed literature that there are different perspectives and different definitions of IS project success and failure, some of them can apply to parts of this research while others are not relevant.

There are a number of themes and questions identified in the literature as having an impact on project outcomes to be discussed with the interviewees and fully explored by the researcher. The evidence from the interviews and examination of key documents will help the researcher to form a clear picture of measures against which IS projects have done well and those that have not. This picture will be used by the researcher to

define success and to determine the key factors that have contributed to success. Finally, the researcher will make references to, and comparisons with, the evidence that has emerged from the literature.

The areas that have been identified from the above literature are explored during the interviews of those involved in the two PACS projects as the factors that can impact the overall project outcome.

### **2.3.7 Summary and Discussion**

The literature used to explore IT enabled change, project success and benefit realisation from such initiatives across the NHS, and the engagement of doctors and the role they play in realising benefits. Key areas of literature were identified and examined. The main four bodies of literature that have been identified include the management of change, information technology, stakeholder management and project success and failure. The context for the study has also been identified and examined, which is the National Health Service. Following examination of the literature, the research question was confirmed.

How can the realisation of benefits from IT enabled change be improved across the NHS?

The factors that could influence the projects outcome have been identified from the reviewed literature. These factors formed the basis for developing the initial set of themes and questions that were used during the empirical study. The broader themes that have emerged from the literature include: Business case and Investment decision; Project structure; Implementation approach, The role of clinicians; Communications, Training; Benefits realisation, Change management; and Relationships. The above broader themes, the more specific questions and the links to the literature are included in table 11.

#### **The NHS**

The literature indicated that the NHS is a large and complex organisation, and has special characteristics that need to be taken into account when designing and implementing new initiatives. These characteristics include the accountability arrangements, the government and the political influence, the role and power of the clinicians, and the funding arrangements. Understanding the NHS and the key challenges to NHS organisations and staff, has provided a better understanding on how benefits could be managed and realised more effectively and systematically.

A number of associated areas were explored in more detail, such as the types and nature of change, models of change, pace of change, technology and implementation, IT enabled change, benefit realisation and stakeholders' interests, clinicians and professionalism. The reasons for failure of IT enabled change initiatives are well documented, and in general the literature points out the integration of IT enabled change with other business processes change is key to the success of such initiatives.

## **Management of stakeholders**

The management of stakeholders' interests have been identified as a key factor to realising benefits from IT enabled change, particularly the role of doctors. "Business benefits realised depend on achieving a fair balance between the organisation and its stakeholders. The issue of gain sharing is of critical importance... with no apparent benefits to them, stakeholders are likely to resist the system." (Jurison, 1996). Tension and conflict between NHS stakeholders is clearly demonstrated through the clinicians' and managers' relationship, and by the level of clinicians' participation in IT enabled initiatives. Clinicians have competing priorities. Their loyalty lies within their professional body (The British Medical Association and the various royal colleges) but, on the other hand, they are under an obligation to implement the priorities of the employer NHS organisation. The interests of the professional groups and the NHS are not always the same, causing tension and frustration to clinicians. The manager subordinate relationship in the NHS is not a straight forward one. It is complicated by the characteristics of professionalism, which is strongly present in the NHS. The key feature of clinicians in the NHS is their autonomy that gives them power and status. Clinicians have this autonomy and power due the specialist knowledge that they possess, and the backing of their powerful professional bodies.

## **Organisational Change**

Predominately the literature suggests that organisations continually implement small changes, however there comes a time when a transformational change is required, due to changes in the environment, deterioration in performance, or to gain a competitive advantage. However, in order for the change to be effective, the benefits and payoffs must be realised. Having understood the nature of change (revolutionary or evolutionary), the area of management of change was considered. The various change models that were developed since the 1950s were considered and provided clarity of the various stages that the change initiative goes through from start to finish. Most models have followed Lewin's three stage change model, unfreeze, move and freeze. However, further research by Isabella (1990) and Markus, Axline, Petrie and Tanis (2000) developed a more robust framework that identifies different stages of change.

All the models of change suggest that organisation performance deteriorates immediately after implementing change and therefore this period should be kept as short as possible. This conclusion has led to the exploration of a key issue - the pace of change. The literature considered suggests that temporal pacing is an important factor in managing change that could lead to a proactive approach to managing transformational change.

## **IT and Organisations**

The literature findings point out that IT has physical and social characteristics, and can be an enabler and constrainer. The duality of technology concept by Orlikowski (1992) that was based on Gidden's (1984) structuration theory has provided a useful insight into the characteristics of the technology. Using that same approach to introduce

and implement information technology may not be very productive. There are different facets and categories of information technology that must be understood, and the implementation, intervention and adoption approaches may differ according to the type of technology deployed.

The relationship between information technology and the wider business change was explored through examining the IT enabled change literature. One surprising finding is that failure of IT enabled change is not related to the feasibility or reliability of IT, but to the lack of coherence between IT enabled change initiatives and the rest of the business change agenda. IT enabled change projects are considered successful only if they realise the intended benefits. Benefit realisation remains one of the weak areas in most IT enabled change projects across the NHS. The lack of clarity at the start about the intended benefits and the absence of a systematic approach to realising benefits, were identified as reasons for poor benefit realisation. The lack of clinical engagement in benefit realisation could be another reason for poor benefit realisation and will be the main focus for this research.

### **Success and failure of IT enabled change**

The literature highlighted different perspectives and definitions of success and failure. However the literature was used to determine a number of factors that could influence the project outcome. The literature was also helpful in placing these factors at different points of the projects lifecycles. For example some factors have to be addressed during the planning stage, others during the project implementation, etc.

**Table 11 The interviews themes, questions and linkage to the literature**

<b>Area</b>	<b>Questions</b>	<b>Literature</b>
The investment decision and The business case	<p>Were you involved and or aware of initial investment decision?</p> <p>Who was responsible for developing the business case? Where you involved or aware of this process?</p> <p>What was the process for approving the business case?</p>	<p>Cabinet Office 2000 – Business cases only deals with the technology part.</p> <p>McAfee, 2006 – Executives are making the investment decision without proper assessment.</p> <p>.</p>
Project Structure	<p>Where you aware and or involved in the project structure?</p> <p>How many senior managers were involved?</p> <p>How many clinicians were involved?</p> <p>Who is the overall project sponsor?</p> <p>Were there any project members from outside the organisation?</p> <p>Who was leading the project? Was it IT, Clinicians, or jointly led?</p>	<p>Markus, Axline and Petrie, 2000 – Project stage and project team formation.</p> <p>Remenyi, 1999 – Projects are managed by small group that follow their own interests. Project teams are dominated by IT staff that influence the focus of projects.</p> <p>Ward, Hemingway, and Daniel, 2005; Byrson, 1998) – The involvement of the stakeholders and the reconciliation of their interests are important factors to project outcome.</p>
The implementation Approach	<p>How was the project implemented?</p> <p>How effective was the implementation?</p> <p>How problems were managed?</p> <p>Was the system reliable?</p>	<p>Peppard and Ward, 2005 – Problem solving or innovation approach</p> <p>McAfee, 2006 – Categories of IT (Functional, Network, Enterprise) and the appropriate implementation approach</p> <p>Tushman, Neman, and Romanelli 1986 - Rapid implementation will reduces the period of uncertainty</p> <p>Gersick, 1994 - Combining temporal pacing with punctuated change impact projects outcome</p> <p>Zuboff, 1985 - There are two aspects to technology implementation, Automate and informate. The automation produces information about the</p>

		underlying processes that could be used to improve these processes.
The role of the clinicians	What was the role of clinicians in this project? Do clinicians like and use the system? Were there any clinicians' resistance to this project.	Ward, Hemingway, and Daniel, 2005; Byrson, 1998; Freeman, 1984 – The role of the stakeholders and their interests. Davies and Harrison, 2003 – Clinicians/managers relationships  Kling, 1980; Ury, Brett and Goldberg., 1993 – Stakeholders behaviour, conflict between stakeholders interests  Jurison, 1996 – Stakeholders are likely to resist the system if there were no apparent benefits to them.
Communications	Describe the communication associated with this project	Hendy, Reeves, Fulop, Masseria, 2005 – Impact of communication on NPfIT
Training	Describe the training that has been provided for this system? How newcomers get trained on the system? Do you have access to training manuals and instructions?	Central Computer and Telecommunication Agency, 2000 – IT skills requirements
Benefit realisation	What were the intended benefits of the system? Were you aware of them at the start? Were the intended benefits documented in a benefit plan? What benefits have been realised?	Ward and Daniel, 2006 – Benefits management and implications of poor benefits management.  NAO, 2006, Benefits realisation is a key success factor.  Peppard and Ward, 2005 – Ways of realising benefits  Banker, Rajvivi, Kauffman and Mahmood. 1993; Berger, 1988; Mahmood and Sczewczak, 1999 – Structured approach to realising benefits  Cabinet Office, 2000 – Reasons for failing to realise benefits and the need for a structured approach to managing benefits.
Change Management	What changes in the working practices have taken place as a result of the PACS project, and how were they managed? Has this project been co-ordinated with any other	NAO, 2006 - Effective management of change, is a key success factor.  Gardner and Ash, 2003; Benjamin and Levinson, 1993; Manzoni and Angehrn, 1997 – The reason of the failure of an IT projects is lack of focus

	change initiative that was taking place at the hospital?	<p>on change management</p> <p>Cabinet Office, 2000 – Organisation focus on introducing IT systems, rather than the entire change the organisation needed</p> <p>Peppard and Ward, 2005 - Successful implementation should first establish links between IT enabled change and the vision for the business, then it should innovate in selected processes and activities.</p> <p>Macredie and Sandon, 1999 - “IT-enabled change managers should begin with an objective rather than a plan, and respond to conditions as they arise in an ad-hoc fashion.”</p> <p>Orilkowski, 1992 - The duality of technology – Technology has physical and social characteristics, that should be taken into account.</p> <p>Lewin, 1950, Isabella, 1990 and Markus, Axline, Petrie and Tanis., 2000. - There are different stages to managing change initiatives that have different characteristics that need to be understood and managed accordingly.</p>
Project Outcome	<p>Was the project successful?</p> <p>Would you go back to the old system?</p>	<p>Thong and Chee-Sing (1996); Dalglish, 2000; Sauer, 1999; Fincham, 2002; Lyytinen and Hirschheim, 1987. - Definition of project success and failure.</p> <p>Nelson, 2005; DeLone &amp; McLean 1992-2003. - Different models for achieving project success.</p> <p>Nelson, 2007. - Key factors impacting project outcome</p> <p>Fincham, 2002. - Three different perspectives (rationalist, process, narrative) to examining success and failure.</p> <p>Factors that impact project outcome</p>
Relationships and Stakeholders Interests	<p>What was the relationship with the suppliers like?</p> <p>What was the relationship between the managers and the clinicians like?</p> <p>Has the project impacted that relationship?</p>	<p>Davies and Harrison, 2003; McCartney, Brown, and Bell, 1993. - Clinicians/managers relationships is tense and need to be managed.</p> <p>Nelson, 2005. - Different stakeholders have different interests and different measures of success.</p>



		<p>Ward, Hemingway and Daniel 2005. - Understanding stakeholders' behaviours and the required management styles at different stages of the project are important factors.</p> <p>Freeman, 1984; Greenley and Foxall, 1998; Scott and Lane, 2000. Stakeholder definition. Carroll, 1989; Clarkson, 1995; Mitchell, 1997. - Defining the stakeholders is a key activity in managing projects.</p> <p>NAO, 2006. - Customer supplier relationship impacts project outcome.</p>
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## **2.4 Methodology**

### **2.4.1 Introduction**

This chapter explains the research methodology that is undertaken to answer the research question. The chapter covers the empirical study that has been carried out, the chosen methodology and its main characteristics, the different research philosophies and the selected one for this research; the different research strategies and the selected one for this research; the research design, the data analysis techniques, and the different quality criteria for analysing the data and the selected criteria for this research.

One research question has been developed that this research needs to answer.

How can the realisation of benefits from IT enabled change be improved across the NHS?

The literature review highlighted number of areas that need to be explored in order to answer the main research question. These areas represent the broader themes, provided the framework for undertaken the empirical study and the basis for determining the methodology that is used for this research. These themes, the questions and the links to the literature are shown in table 11.

The first empirical study that has been undertaken in project one is the study of the successful implementation of information technology projects in two NHS organisations. The deployment of PACS (Picture Archiving and Communication Systems) was studied. “PACS provides the technology solution to capture, share, and record medical images in digital format”, (CfH web site, 2006).

Understanding the different research philosophies, and strategies was crucial to designing the research approach that was undertaken in project one. Being mindful at the outset of the quality criteria of the data collection phase and the data analysis phase was also very important to ensure rigour and thoroughness was achieved in this research.

The examination of two successful deployments of IT enabled change across different NHS organisations, has enabled the identification of the number of factors that contributed to this success.

### **2.4.2 Research Philosophy**

The research perspective that was chosen for this research is Interpretive. There are several philosophical perspectives adopted by researchers. Understanding the philosophical perspective will aid the researcher in creating a research design plan and a research strategy. It will also aid the researcher in understanding the practical limitations of the adopted approach (Easterby-Smith, Thorpe, and Low, 2002).

The philosophical perspectives include Positivist; Interpretivist; Critical and Critical Realism. These perspectives are discussed in the next section. Qualitative and/or case study research can be undertaken by adopting any of these perspectives (Klein and Myers, 1999; Walsham, 1999).

#### **2.4.2.1 Positivist**

This perspective has dominated IS research. However, since the early 1990s interpretive research has been gaining popularity and started to be published in key journals in the field (Walsham, 2006). The positivist perspective provides factual and objective accounts of phenomena. Key characteristics of positivist research include:

- formal propositions;
- quantifiable measures of variables;
- hypothesis testing
- drawing inferences about a phenomenon from the sample population.

(Orlikowski and Baroudi, 1991)

#### **2.4.2.2 Interpretivist**

This philosophical perspective advocates that knowledge about reality is gained through the meaning that is assigned to it by humans. It is about human sense-making of social reality and phenomena, and does not advocate the use of predefined variables (Deetz, 1996; Orlikowski and Baroudi, 1991). Interpretive research makes use of meanings, interpretations and motives that shape people's behaviour. "For interpretivism, the social world is the world interpreted and experienced by its members, from the inside. Hence the task of the interpretive social scientist is to discover and describe this insider view, not to impose an outsider view on it." (Blaikie, 2000)

The author, who is the data collector, will pay careful attention to the way the interviews will be conducted and to his role in these interviews, in order to avoid having a strong influence on the outcome of the interviews. It is important that the author finds the meanings and motives that people give to the actions that the participants take or observe, in order to understand and interpret the pattern or correlation that could emerge from analysing the outcome of the interviews.

Data collected by the researcher are not value free, as they are influenced by the researcher's preconceptions and the interaction of the researcher with the participants impacts both parties. The focus of this perspective is on subjectivity, unlike positivism, which advocates objectivity (Walsham, 1995). The interpretivist view of the data they collect is summarised by Geertz (1973): "What we call our data are really our own construction of other people's construction of what they and their compatriots are up to."

### **2.4.2.3 Critical**

“Critical studies aim to critique the status quo through the exposure of what are believed to be deep-seated, structural constructions within social systems, and thereby to transform these alienating and restrictive social conditions.” (Orlikowski and Baroudi, 1991) Researchers adopting this perspective challenge the taking for granted of assumptions, and highlight existing contradictions.

Critical research enhances people’s potential to change their social and economic conditions; however, it acknowledges that there are political, social, and cultural constraints, as well as resource limitations (Klein and Myers, 1999).

### **2.4.2.4 Critical Realism (CR)**

This philosophical perspective has been described as an all encompassing, as it addresses both the natural science and the social science domains. It adopts a realist stance but at the same time accepts the critique of the naïve realism (Mingers, 2004). “The original aims of CR were, i) to re-establish a realist view of being in the ontological domain whilst accepting the relativism of knowledge as socially and historically conditioned in the epistemological domain, ii) to argue for critical naturalism in social science” (Mingers, 2004)

CR represents a strong philosophical perspective for IS research and many other disciplines including economics (Fleetwood, 1999; Lawson, 1997), organisational theory (Tasang and Kwan, 1999) and research methods in general (Layder, 1993; Sayer, 1992)

## **2.4.3 The Research Strategy**

There are four main research strategies: inductive, deductive, retroductive and abductive. Each strategy has an underpinning philosophy and logic of enquiry. Each has strengths and limitations. The research strategy provides a way of answering research question through identifying the various steps that need to be undertaken to conclude the research (Blaikie, 2000). A summary of the four strategies is shown in table 12.

**Table 12 The logic of four research strategies**

	<b>Inductive</b>	<b>Deductive</b>	<b>Retroductive</b>	<b>Abductive</b>
Aim	To establish universal generalisation to be used as pattern explanations	To test theories, to eliminate false ones and corroborate the survivor	To discover underlying mechanisms to explain observed regularities	To describe and understand social life in terms of social actors' motives and accounts
From	Accumulate observations or data  Produce generalisations	Borrow or construct a theory and express it as an argument  Deduce hypotheses	Document and model a regularity  Construct a hypothetical model of a mechanism	Discover everyday lay concepts, meanings and motives  Produce technical account from lay account
To	Use these 'laws' as patterns to explain further observations	Test the hypotheses by matching them with data	Find the real mechanism by observation and or experiment	Develop a theory and test it iteratively

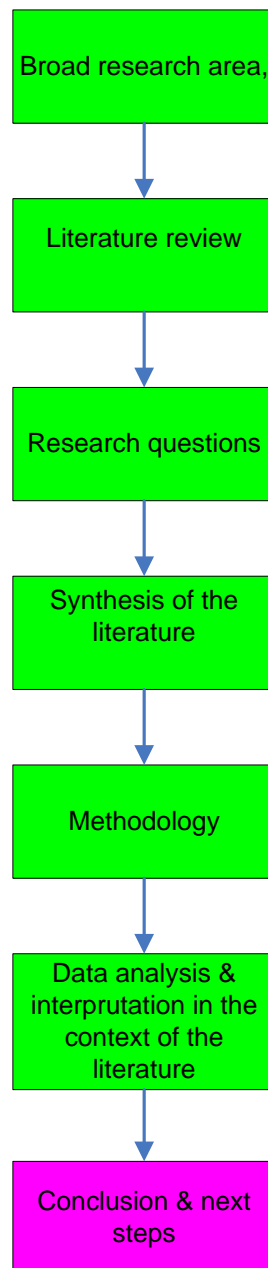
(Source – Blaikie, 2000)

In this case study the author is researching the implementation of PACS that have already taken place (retrospective), and is trying to discover and understand the issues relating to benefits realisation. This could lead to a better understanding of the real mechanism that underpins the reason for the lack of benefit realisation, and helps to explain how the key problems impacting the benefit realisation could be resolved.

The author's interest is in understanding how the intended benefits of IT enabled change investment can be realised and success be achieved. These question stem from a wide recognition in the academic research and the practitioners' experience that such benefits are not routinely measured or recognised, particularly within the NHS, and success of IT enabled change implementation is lacking. Therefore the author's strategy was to examine such evidence by undertaking two case studies across two organisations. The author aims to validate or otherwise these claims, identify the key factor or factors that influence the realisation of benefits, and use all the available evidence to construct an understanding of the reasons that prevent or obstruct the benefits from being realised. The overall research strategy will be part of project 1. The broader steps of project 1 are illustrated in Figure 11.

Two interpretive case studies were undertaken for the first empirical study. Case study has been a common research strategy in many disciplines. "It is used to contribute to knowledge, of individual, group, organisation, social, political, and related phenomena" (Yin, 2003). Case studies are also appropriate for "how" and "why" research questions.

**Figure 11 the broader steps of P1**



#### **2.4.4 The empirical study**

The empirical study that is used to answer the research question is based on the interpretivist perspective, using qualitative case studies.

There are different ways for collecting and analysing data for the empirical work, and different philosophical perspectives as discussed earlier. For this research the interpretivist perspective is adopted and a case study will be used to undertake the

empirical work. Yin (2003) explains that there are three conditions that determine the method for undertaking the empirical study.

1. The type of research question
2. The extent of control the researcher has over behavioural events
3. The degree of focus on contemporary as opposed to historical events

Case studies are suitable for How and Why questions, interviews of people involved in the events, and for examining contemporary events when the relevant behaviours cannot be manipulated. In this empirical study all the above three conditions have been satisfied, therefore the case study method was selected. Furthermore the case study as research strategy comprises an all-encompassing method – covering the logic of design, data collection techniques and specific approaches to data analysis (Stocker, 1991).

The researcher is part of the overall social experience, so being mindful of his own prejudices and understanding the meanings that the participants give when explaining their knowledge of the areas that impact the realisation of benefits, will be the most appropriate perspective to adopt for this research. Therefore the most appropriate philosophical perspective, and the one that is adopted by the researcher, is interpretivism.

The researcher's approach to undertaking the field work is qualitative case study, where the data were collected through mainly face-to-face interviews. The reason for this will be discussed later. Underpinning this research and the chosen methodology for data collection is the belief that the researcher will influence, and be influenced consciously or subconsciously by the experience and the interaction with the other participants. Therefore the data collected are not value free and a key premise for the research is subjectivity.

The researcher has worked in the information management field in the NHS for 15 years and has been involved in the high level planning of the PACS implementation across the country. He has also worked with clinicians on a number of information technology implementations. Therefore the researcher has his own views and thoughts about the research area that has, to some extent, influenced his approach and interactions with the participants, and in turn was influenced to some extent by the participants' views and the meaning they gave to the research area. This is another reason for adopting the interpretivist perspective.

#### **2.4.5 Research Design**

Research design has been defined as, “A logical plan for getting from here to there, where here may be defined as the initial set of questions to be answered, and there is some set of conclusions (answers) about the questions.” (Yin, 2003) A research design “Guides the investigator in the process of collecting, analysing, and interpreting observations. It is a logical model of proof that allows the researcher to draw inferences concerning causal relations among the variables under investigation.” (Nachmias and

Nachmias, 1992) The research design must ensure that the research question is addressed.

There are three key components to research design: the research question (and possibly the propositions); the unit of analysis; and data analysis and interpretation of the data. The research question that has been constructed is:

How can the realisation of benefits from IT enabled change be improved across the NHS?

The unit of analysis is the PACS implementation. The themes and the questions that have emerged from the reviewed literature formed the basis for undertaken the case studies. Multiple data types and data sources were used for these case studies (see data sources and types). Established analytical tools such as NVIVO, together with the researcher's examination of the data contents, were used to analyse the data.

Two London hospitals were identified for the two case studies, and agreement for participation were obtained from either an executive director or the chief executive of each hospital. Both hospitals have recently implemented the same PACS system. These case studies represent two successful implementations of IT enabled change in the NHS. These cases highlighted the key factors the influence the project outcomes and the benefits realisations approaches that have been adopted and their effectiveness.

The technology that is deployed in both cases is the same and provided from the same supplier. This approach helped to limit the number of variables, and allow the investigation of the implementation approaches, and the determination of the impacts of the various factors/themes that have been identified from the literature. The selection of two case studies had improved the validity and the reliability of the findings. Details of the PACS technology and its intended benefits are discussed in the following section.

#### **2.4.5.1 PACS**

Picture Archiving and Communications System (PACS) is a technology that enables X-Rays and other scan images to be stored digitally on a computer hardware platform. This technology enables clinicians to access the images from different locations simultaneously, and allows them to compare and manipulate the images. This technology allows organisations to move away from hard films, which were previously the only medium for producing clinical images.

The National Programme for IT target for PACS implementation is to ensure that every hospital trust implements PACS by the end of 2008. PACS has a wide impact on the organisation; although it is usually managed by the Radiology department in the hospital, due to the increased use of clinical images, other hospital departments use the system too, including A&E, Cancer, Cardiology, Orthopaedics, etc. The implementation of PACS impacts staff roles and day to day duties. For example the staff members that responsible for the storage and retrieval of hard copy films will no longer be required, since that function no longer needs to be performed. However new



roles have to be created; for example the PACS system has to be maintained and supported and new staff will need to be trained on the use of the system. These roles and functions can be undertaken internally or contracted out. The point is that the implementation of the PACS system has wider organisational implications that need to be addressed.

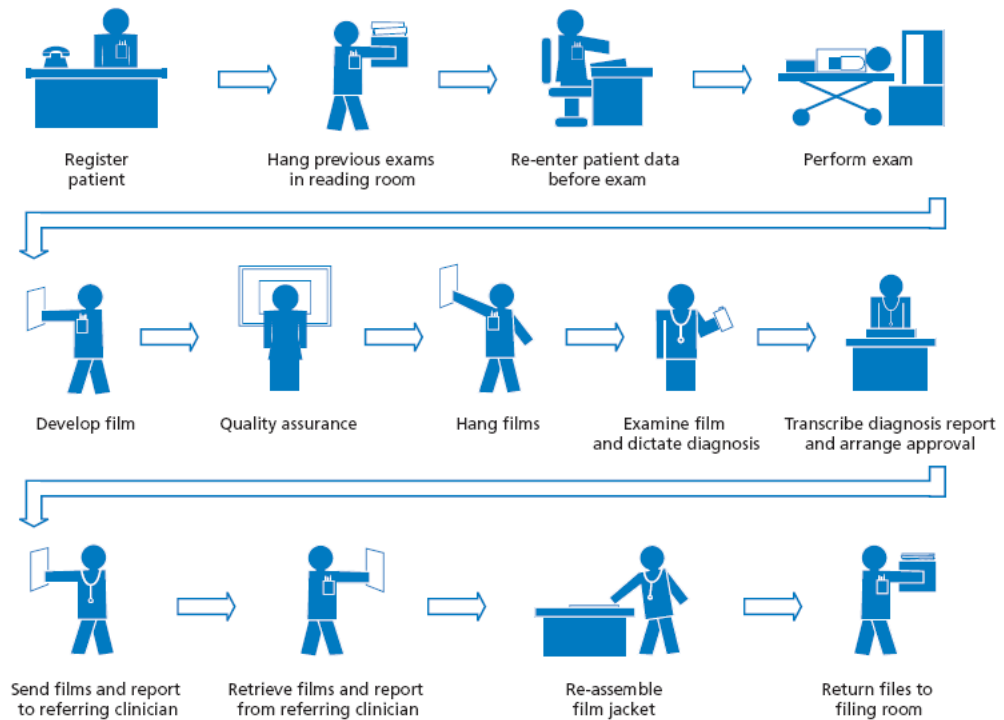
The NHS Connecting for Health, the organisation responsible for the delivery of the National Programme for IT, has recently described the key features of the PACS solution as follows:

- “PACS enables clinicians always to be able to access the right image in the right place at the right time to support an efficient, high-quality and well-communicated diagnosis. Digital imaging allows:
  - faster delivery of medical images to the clinicians that evaluate and report on them. This can lead to speedier availability of results;
  - no lost or misplaced images, which means fewer postponements or cancellations of operations due to images not being available;
  - flexible viewing with the ability to manipulate images on screen, which means patients can be diagnosed more effectively;
  - instant access to historic images and patient records;
  - better collaboration, as PACS can be viewed from multiple terminals and locations by a range of clinicians, allowing discussion over diagnoses;
  - fewer unnecessary re-investigations, which will in turn reduce the amount of radiation to which patients are exposed.”

(CfH web site, 2006)

# The world before and after PACS

## Before



Over six days average turnaround time\*

## After



Under three days average turnaround time\*

(Source CfH web site, 2007)

#### **2.4.5.2 Data Sources and types**

Multiple sources and types of data were used in order to increase the richness of the data collected and reduce the impact of any biases that the data may have. There are three types of data. Primary data are generated as a result of direct contact between the researcher and the data source. These are the main types of data that were generated and used for this research, as the author generated most of the data from interviewing the selected participants. There are also secondary and tertiary data types. Secondary data are generated by another researcher and tertiary data are analysed by another researcher. Primary data are most useful as the author/researcher will have control over the data collected and will be able to judge their quality, while other types of data may have some quality issues and may have been collected for a different purpose (Blaikie, 2000).

The interviews provided a rich source of data, and enabled the researcher to examine and record the meanings the participants give to events and experiences. The interviews also allowed the researcher to ask further unplanned questions as they emerge through the interviews process. Besides the data from the interviews, other sources of data were used including documents such as project plans, review and progress reports, business cases, benefit realisation plans, and the NHS Connecting for Health Programme.

#### **2.4.5.3 The structure of the interviews and links with the literature**

Face-to-face semi-structured interviews were used. Clinicians, managers and other staff were interviewed. Twenty members of staff were interviewed across the two organisations. The interviews lasted for approximately 60 minutes each. The interviews were recorded and transcribed. The participants have been offered the opportunity to check the authenticity of the transcriptions.

A number of key areas that impact benefit realisation and project success were identified from the literature, including these areas together with the researcher's experience of the NHS, have formed the basis for constructing the interview questions. However, a number of new related questions emerged during the flow of the interviews and these were also used and discussed. Table 11 sets out the key areas that have been discussed during the interviews, the questions that were asked in each area, and the links with the reviewed literature.

#### **2.4.5.4 Practical points to consider when conducting interviews**

“Interviews are part of most interpretive studies as a key way of accessing the interpretations of informants in the field.” (Walsham, 2006) There are a number of areas that were considered and addressed prior and during the interviews, these areas are briefly discussed below.. Time keeping is crucial to developing rapport with the interviewee. The researcher must arrive on time to show that they are serious about their work and they value the participant's time. Time keeping during the interview is

also important, in order to ensure that the researcher maximises the outcome from the interview. The researcher has to find a balance between being totally passive during the interview, i.e. not attempting to direct the interview at any stage, and being over directive. The researcher should reassure the participants about confidentiality in order to capture an accurate account of the participant experience and views. (Walsham, 2006)

As discussed earlier, the interviews were recorded and transcribed. This represents the best way of capturing all the verbal information from the interview. There are advantages and disadvantages of tape recording. Tape recording of the interviews represents a comprehensive record of all the verbal information that was discussed during the interview, unlike the note taking where some information will be missed. Key and useful quotations can be captured accurately and be used in the data analysis. Tape recording also gives the researcher more freedom to concentrate on conducting the interview, listening to the participants' viewpoints and asking further questions as and when required.

There are number of disadvantages to tape recording, transcription is time-consuming and expensive. Some participants could be less open due to the presence of the recorder, or could refuse to take part all together. Finally the recording will miss all the body language signals and some of the emotions that are expressed by the participants.

#### **2.4.5.5 Selecting the participants**

The hospitals have identified the key departments within their organisations that use the PACS system. A stratified sample was identified that provides a mix of participants from different disciplines and across key departments. The author's approach to identifying participants that meet the requirements of the stratified sample was to use the hospital staff directory. The participants come from disciplines such as clinical, management and administration. The final list of participants (realistic list) was not exactly the same as the initial list (ideal list), this was due to number of practical issues including, difficulties in getting access to very busy clinicians, or due to the fact that some participants did not honour the appointments made with them.

The participants were sent information about the interviews, in advance of the interviews taking place. If a selected individual was not willing to participate, or not available, then one of the two following approaches was used to identify another potential participant:

- a) The service manager of the department concerned was asked to suggest an alternative participant within their department, mainly based on their availability. (This was subject to the availability of the service manager)
- b) The staff directory was used to identify an alternative participant

## 2.5 Case Study Analysis

Case study analysis is a key part of completing the case study and arriving at the results and findings. It plays a major role in aiding the construction of the intermediate and final conclusions of the case study. “Data analysis consists of examining, categorizing, tabulating, testing, or otherwise combining both qualitative and quantitative evidence to address the initial proposition of a study.” (Yin, 2003) A robust case analysis will not be achieved through the use of case analysis strategy alone, but supported by appropriate techniques and tools and the applications of key quality criteria such as construct, internal and external validity, reliability, etc.

The key principles that underpin the analysis of this case study evidence are:

1. All the evidence should be addressed thoroughly, including the development of rival hypotheses. The analysis should demonstrate how all the relevant evidence was obtained. Any relevant evidence that has been ignored could make the analysis vulnerable to alternative explanations or interpretations.
2. The analysis should address all the major rival interpretations. Alternative interpretations should be dealt with as rivals. The analysis should assess any evidence available that supports or otherwise the rival interpretations.
3. The analysis should maintain focus on the main aspect of the case study and should address the most important issue.
4. Prior, expert knowledge of the case study and the subject area would strengthen the analysis of the case study. This involves the demonstration of the awareness of the current thinking in the subject area.

Yin, 2003, has identified three general strategies for case study analysis:

1. *Relying on theoretical propositions* – The initial proposition that led to the literature review, then the research questions, and finally the case study, should be the focus for driving the case study analysis.
2. *Thinking about rival explanations* – Rival explanations should be defined and tested. Following this strategy the researcher should collate the necessary evidence about the rival explanations, to avoid been accused of stacking the evidence in favour of their explanation.
3. *Developing a case description* – This is about developing a descriptive framework for the case study.

### **2.5.1 The chosen case analysis strategy**

The strategy that was adopted here is focused on the use of the original theoretical proposition (benefits of IT enabled change in the NHS are not realised and project success is lacking) and developing and constructing case descriptions. The validity and reliability of the result were also assessed to ensure rigour in the research findings.

### **2.5.2 Analytic techniques**

Five techniques have been identified to analyse case studies (Yin, 2003). They include:-

*Pattern Matching* – In this technique the researcher matches the empirically-based pattern with the predicted one. If these patterns match then that will strengthen the robustness/internal validity of the argument. This is one of the most common techniques for analysing case studies.

*Explanation Building* – this technique is concerned with analysing the data by building an explanation about the case. This is more difficult than pattern matching, and one of the dangers of this approach is that the researcher could drift away from the key issue.

*Time Series Analysis* – This technique could involve simple time series, complex time series or chronologies. It is concerned with the traceability of changes over time, and it also helps to identify cause and effect over time.

*Logic Models* – This technique has become more popular in recent years. It examines complex chains of events over time, and identifies cause-effect-cause-effect patterns, where by an initial intervention could lead to an immediate outcome that leads to intermediate outcomes which in turn lead to the final outcome.

*Cross Case Synthesis* – This technique is used for analysing multiple cases. Each case is analysed separately and a framework is used to identify key themes. Cross case analysis is undertaken to identify similarities or differences.

### **2.5.3 The selected technique/s for the data analysis**

The author used number of techniques to analyse the data, including Explanation building, and Cross case synthesis. However Pattern matching, Time series analysis or Logic models were not used in this analysis. There is no predicted pattern available to compare it to an empirical pattern, therefore the pattern matching technique was not used. The undertaken study is not examined over time which is the basis for the time series analysis, therefore this technique was also not used. Finally logic models were not constructed, but a computerised tool NVIVO was used to reduce the data and aid the analysis.

The author started the data analysis by examining each case separately. Initially the answers to individual questions within each theme were examined and analysed (content analysis), this was followed by analysing all the answers within each theme, and finally cross theme analysis within each case was undertaken. The documentations relating to each case were examined and analysed to enable a robust and more reliable way of arriving at the findings. This initial approach was used as the basis for the coding of the data, this has enabled the data to be analysed in a systematic way. The coding and categorisation of the data also supported the use of the computer aided tool, NVIVO.

Following the detailed examination of the data, open coding technique was used to establish categories, their properties and dimensions. Strauss and Corbin (1998) described open coding as “the analytical process through which concepts are identified and their properties and dimensions are discovered in data.” The second technique that was used to code the data is axial coding. “It is the process of relating categories to their subcategories, termed axial because coding occurs around the axis of the category, linking categories at the level of properties and dimensions.” (Strauss and Corbin, 1998). This technique enables detailed analysis of the data and deeper understanding of the text data. The key tasks of axial coding are described below:

1. Laying out the properties of a category and their dimensions, a task that begins during open coding
2. Identifying the variety of conditions, actions/interactions, and consequences associated with a phenomenon
3. Relating a category to its subcategories through statements denoting how they are related to each other
4. Looking for clues in the data that denote how major categories might relate to each other

Finally selective coding was undertaken. This technique is concerned with integrating and refining categories to generate, central categories that will form the basis for a theoretical framework to explain the findings. The key tasks for choosing a central category as described by Strauss are shown below:

1. It must be central: that is all other major categories can be related to it.
2. It must appear frequently in the data. This means that within all or almost all cases, there are indicators pointing to that concept.
3. The explanation that evolves by relating the categories is logical and consistent. There is no forcing of data.
4. The name or phrase used to describe the central category should be sufficiently abstract that it can be used to do research in other substantive areas, leading to the development of a more general theory.
5. As the concept is refined analytically through integration with other concepts, the theory grows in depth and explanatory power.
6. The concept is able to explain variations as well as the main point made by the data; that are when vary, the explanation still holds, although the way in which a phenomenon is expressed might like somewhat different. One also

should be able to explain contradictory or alternative cases in terms of that central idea.

The author worked within the context of the literature and the initial proposition and the research question, to analyse the data. The key issue guiding the research is the realisation of benefits from IT enabled change and achieving success. Therefore the focus of the data analysis was based on these key issues.

Cross case synthesis was used following the analysis of each case individually. The cross case synthesis started by examining the answers to individual questions across the two studies. This was followed by cross theme analysis and finally across case analysis was undertaken. This analysis helped the researcher to identify the similarities and the differences between the two cases. This could strengthen the validity and relevance of the findings as well as their generalisation.

#### 2.5.4 Quality Criteria for the data collection phase

A key area that impacts the quality of the data collection is the author's preparation to conduct the interviews. Therefore literature in this area, together with advice from the author's supervisor, has been explored prior to conducting the interviews. Furthermore the quality criteria in table 13 have been used during the data collection phase to assess the quality of the collected data.

**Table 13 Quality criteria for data collection**

<b>Criteria</b>	<b>Evidence</b>
Select a random sample of participants	Done ( see section 2.4.5.5)
Use multiple sources of data such as interviews, business cases, project plans, etc.	Done (See section 2.4.5.2)
Establish linkages between the questions asked during the interview and the reviewed literature	Done (See section 2.4.5.3 and Table 10)
Use a variety of participant groups, such as clinicians, senior managers and administrators	Done (See section 2.4.5.5)
Record and transcribe the interviews	All the recording of the interviews have been transcribed by professional third party (See section 2.4.5.3)
Offer the participants the opportunity to authenticate their transcriptions	Done (See section 2.4.5.3)

#### 2.5.5 Quality Criteria for Assessing the Case study

There are a number of published criteria that can be adopted to assess the quality of the research. Klein and Myers (1999) have developed seven principles to assess the quality of interpretive field research. The principles are:



1. The fundamental principle of the Hermeneutic circle
2. The principle of contextualisation
3. The principle of interaction between the researcher and the subjects
4. The principle of abstraction and generalisation
5. The principle of dialogical reasoning
6. The principle of multiple interpretations
7. The principle of suspicion

Golden-Biddle and Locke (1993) devised three main criteria to assess the quality of ethnographic text. These criteria are authenticity, plausibility and criticality. These criteria have been adopted by Walsham and Sahay (1999) to assess the quality of their interpretive study. Yin (1994) devised four criteria to assess the quality of research that are mainly concerned with a positivist case study: construct validity, internal validity, external validity and reliability. Finally Miles and Huberman (1994) devised five criteria to assess the quality of the research of a realist case study: objectivity, reliability, internal validity, external validity, and utilisation.

The purpose of all these criteria is to ensure rigour is achieved, and the entire research approach, methodology and findings are robust. The criterion that was adopted to assess the quality of this research was based on internal validity, external validity and reliability. These are recognised and widely used criteria in research.

The quality criteria of internal validity, external validity and reliability were applied in this case study across the two organisations. First the internal validity was satisfied by using multiple data sources. Data from the interviews, the business case and from the Strategic Health Authority were used to arrive at the findings. The researcher was aware from the start of the potential biases that stemmed from his involvement in the NPfIT and the regional strategic health authority. Therefore the author had carefully managed such biases. For example during the interviews he introduced himself as a researcher rather than an NHS employee, furthermore he assured the interviewees that they would have the opportunity to check the authenticity of the transcribed interviews and finally their comments will be anonymous.

The external validity was strengthened by undertaking two case studies. The external validity was further assured by the fact that the findings from the two organisations were generally in line. However the author does not claim that the finding from these two case studies can be generalised. No definitive claims are made in these case studies that a particular factor was the cause of positive project outcome. Instead it is suggested that the areas that were managed well could have influenced the project outcome.

Finally the area of reliability was tested by ensuring that key findings were supported by evidence from the analysed data. The author was keen to quote interviewees on all the tested themes, and clear audit trail was established. Furthermore evidence from all the available data sources was also used and the biases were minimised as indicated earlier.

## **2.6 Data Analysis**

### **2.6.1 Introduction**

The implementation of PACS (Picture Archiving and Communication Systems) was examined in two NHS Hospitals in London. The studies were conducted using semi-structured interviews. Ten members of staff from each organisation were interviewed. The staff interviewed were clinicians (doctors and nurses), managers and administrators across different departments in the two hospitals. The spread of the interviewees over various departments and different roles across the organisations helped the researcher to capture views from wider perspectives and different organisational settings. In Greater London Trust seven clinicians and three managers were interviewed while at Central London Trust eight clinicians and two managers were interviewed. However some of the clinicians in both organisations held managerial positions.

Prior to the interviews, a number of themes and questions within each theme were developed. Those themes and questions formed the basis for the discussions during the interviews. The themes represented the broader areas, while the questions sought to obtain specific information within these broader areas. Some of the questions could be placed under more than one theme; therefore the researcher used his own judgement to determine the best place for the questions. These themes and questions were developed following an extensive literature review, initial discussions with the two organisations concerned and further discussions with the researcher's supervisory panel. The links between the literature, the themes and the questions are illustrated in table 11.

The case studies were analysed separately, then cross-case analysis was undertaken.

### **2.6.2 The Greater London Trust**

#### **2.6.2.1 Background**

The Greater London Trust is a district general hospital providing a wide range of medical, surgical and specialist services. The trust has two hospitals over two different sites, Greater London Trust (the main site), and Greater London 2 hospital. The new Greater London Trust was opened in the 60s, and it is currently undergoing a major redevelopment that will be completed in 2010, resulting in improved facilities and modern buildings.

The Trust has an annual budget in excess of £100 million and employs nearly 2,500 members of staff working to deliver high quality healthcare to a local population of over 300,000. In 2004 the hospital treated about 28,000 inpatients, 12,000 day patients and 199,000 outpatients. There were more than 84,000 attendances in our Accident & Emergency department and over 3,300 babies were delivered (Greater London Trust Website, 2008)

The trust has in recent years invested in number of Information Technology solutions including a new Patient Administrative System (PAS), a new pathology system, upgrades to the IT infrastructure, and was the first in London to implement the NPfIT Picture Archiving and Communication System (PACS). The trust started the planning process for implementing PACS back in 2004, prior to the start of the NPfIT PACS. In early 2005, the trust was chosen to implement the first PACS in London. This selection was based on the organisational commitment to implement a PACS solution and the early involvement of staff in the PACS planning. The trust went live with the NPfIT PACS in July 2005. The trust implemented PACS in stages. It was first implemented in radiology and A&E, and then very quickly rolled out to the rest of the departments across the main site. PACS was implemented in the small second site three months later. The delay to implementing PACS across the second site was mainly due to the need to implement a high speed communication link between the two sites. The interviews for this research were undertaken between December 2006 and February 2007.

The deployments of the above projects received the support and the approval of the trust board, showing real commitment to modernising health services through the use of technology. This organisation is also financially stable, which is normally very challenging to achieve in the NHS.

The trust was interested in implementing PACS and developed a full business case prior to the start of the NPfIT. This had generated awareness and interest in PACS prior to the NPfIT. As a result of this early interest, the level of awareness and commitment by the organisation to implement PACS, the organisation was selected to be the first site in London to implement the NPfIT PACS solution.

The Greater London Trust is planning to apply to the department of health for a foundation trust status. Foundation Trusts operate independently of the Department of Health and the Strategic Health Authority, but are still part of the National Health Service and healthcare will continue to be delivered according to core NHS principles – free care, based on need and not ability to pay. Foundation Trusts give their own staff, patients and local residents a real opportunity to play their part in the future of their hospitals, by becoming members or governors of the Trust. Foundation Trusts are permitted to use their financial surpluses to develop healthcare services for local people, under strict controls imposed by the independent national regulator, Monitor (Greater London Trust Website, 2008).

The current Trust objectives are:

- To provide our patients with safe, high quality, evidence-based services
- To engage with patients, public and staff so as to achieve responsive services
- To be a model employer and value the contribution of our diverse workforce
- To invest in our services through sound financial management

- To realise the benefits of technology and service modernisation
- To be the healthcare provider of choice in Greater London Trust and beyond
- To continue our work towards the redevelopment of our hospital on both sites

The trust mission is: To be the best District General Hospital

### 2.6.2.2 Explaining the Data

Ten members of staff from Greater London Trust were interviewed. Their profiles are discussed below and summarised in table 14, and listed below.

- A. Director of Radiology
- B. Clinical Director of Surgery
- C. Clinical Director of Emergency Care
- D. Consultant Urologist
- E. Consultant Rheumatologist
- F. Consultant Physician
- G. Senior A&E Sister
- H. Radiology Manager
- I. Project Manager
- J. Director of Strategy and Information

The director of radiology services was the lead clinician on the project, and led the communication with the clinicians. He was involved in the NPfIT London PACS, sharing some of the learning from the Greater London Trust implementation and advising the NPfIT on the way forward. He was critical of the NPfIT approach to implementing PACS, and gave many interviews to the press on this subject. He is a heavy user of PACS.

The clinical director of surgery was the clinical representative from the surgery department. He liaised with his colleagues, the IT department and the project board to implement PACS at the Department of Surgery. He is a supporter of the project and a heavy user of PACS

The clinical director of emergency care was not involved in, or aware of, the early activities of the project, such as the initial investment decision or the business case. He was not involved in the project structure but aware of it. He was a supporter of the project and a heavy user of PACS.

The consultant urologist had some awareness of the initial investment decision and the project structure but had no involvement in the project structure and little awareness of other activities. He was familiar with PACS as he used it in another hospital, and was a regular user of PACS.

The consultant rheumatologist was aware of the early activities of the project but was not aware of, or involved in, the project structure. He was familiar with PACS

as he used it in another hospital, and was a heavy user of PACS. He did not hold a management position in the organisation.

The consultant physician was a clinical director, but resigned from her management position as she was planning to retire within a year. She led the development of national guidelines for the care of diabetic patients. She believed in the role of information technology to support the delivery of care, but she relied on her junior doctor to use IT on her behalf. She was not involved in, or aware of, the early activities of the project, but she was aware of the project structure. She is a regular user of PACS.

The senior A&E sister was aware of and involved in the project structure, and was aware of some of the early activities of the project. She was due to start a new job at a different hospital within few months. She is a regular user of PACS.

The Radiology Manager was involved in and aware of the early activities of the project and the project structure. She was heavily involved in the implementation of the project and the training programme. She was also responsible for managing the realisation of benefits at the radiology department. She was a regular user of PACS.

The project manager was fully involved in the early activities of the project and the project structure from the start. She did not have a clinical background and was a member of the Strategy and Information Directorate.

The director of strategy and information was the project SRO, a senior, influential executive with many years service at the trust. He did not have a clinical background and was not a user of PACS. He was, as would be expected, fully aware of the project early and ongoing activities. He was very positive about the entire project experience.

**Table 14 Summary of the interviewees profile at the Greater London Trust**

Interviewee	Role	Comments	Use of the system
A	Consultant Rheumatologist	A senior consultant who requires the use of images on daily basis in his job.	Heavy user
B	Consultant physician	A senior consultant who used to occupy a managerial position. She will be retiring within a year.	Regular user
C	Director of radiology services	An outspoken clinician who gave many interviews to the press about the project and about the improvements required to the NPfIT.	Heavy user
D	Clinical Director, Emergency Care	A senior clinician with a senior management role in the organisation.	Heavy user
E	Clinical Director of surgery	A senior clinician (Anaesthetist consultant) holding a senior management role in the organisation. Heavily involved in the PACS project from its early days.	Regular user
F	Radiology Manager	A manager who is heavily involved in the operational management of the project, the organisation, the delivery of the training and some of the liaison with the external suppliers. Fully trained on the use of the system.	Regular user
G	PACS Project Manager	The PACS project manager	Not a user
H	Consultant Urologist	A senior consultant who was not involved in the management or the structure of the project.	Regular user
I	Senior sister A&E	A senior nurse who was not involved in the management or the structure of the project.	Regular user
J	Director of Strategy and Information / PACS SRO	A senior executive director, with long years of service at this trust. The lead for information technology at the trust, and the main sponsor for most the Information technology projects across the trust.	Not a user

All the interviewees' answers were coded as Y for positive answers, N for negative answers, or left blank for no answers, and the result is summarised in table15.

**Table 15 The full interviewees' answers given as Y or N, at the Greater London Trust**

Themes	Areas	A	B	C	D	E	F	G	H	I	J
BC & ID	Investment Decision Involvement	Y	N	N	N	N	N	N	Y	Y	Y
	Investment Decision Awareness	Y	Y	N	Y	Y	N	Y	Y	Y	Y
	BC Involvement	Y	N	N	N	N	N	N	Y	Y	Y
	BC Awareness	Y	Y	N	N	Y	N	N	Y	Y	Y
PS	Project Structure Involvement	Y	Y	N	N	N	N	Y	Y	Y	Y
	Project Structure Awareness	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
	IT Led		N				N	N	N	N	N
	Clinicians' Led		Y				N	Y	N	Y	Y
	Jointly Led		N				N	N	Y	N	N
Implementation	Implementation Approach Good	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	System support available	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	System Reliable	Y		Y	Y		N	Y			Y
Clinicians	Clinicians' Use the System	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Initial Clinicians' Resistance	N	N	Y	N	N	Y	N	Y	N	N
	Clinicians' Resistance Now	N	N	N	N	N	Y	N	N	N	N
	Clinicians' Engagement & Involvement	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Communication	Sufficient Communication	Y		Y	Y	Y	Y	Y	Y	Y	Y
	Different methods Communication	Y		Y	Y	Y	Y	Y	Y	Y	Y
Training	Training Sufficient	Y	Y	Y	Y		Y	Y	Y	Y	Y
	Formal 1 Day or Longer Dedicated Training		N		N	N	N	N	N	N	N
	Informal Short and Flexible Training		Y		Y	Y	Y	Y	Y	Y	Y
	Newcomers Training	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Benefits	Awareness of Benefits	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Benefits Realised Routinely	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Formal Benefits Plan in Place	Y	Y		N		N	Y	Y	Y	Y
	Benefit Realisation Audit	N	N	N		Y	N	N	N		Y
Change	Changes in Working Practices	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Changes Well Planned and Executed	Y							Y	N	Y
	Coordination with Change Initiatives								N		Y
Success	Would They Go Back to Old Systems	N	N	N	N	N	N	N	N	N	N
	Project Successful	Y	Y	Y		Y	Y	Y	Y	Y	Y
Stakeholders Relationship	Customer-Supplier Relationship Good		N						N	N	Y
	Manager-Clinician Relationship Good	Y		Y	Y	Y		Y		Y	Y

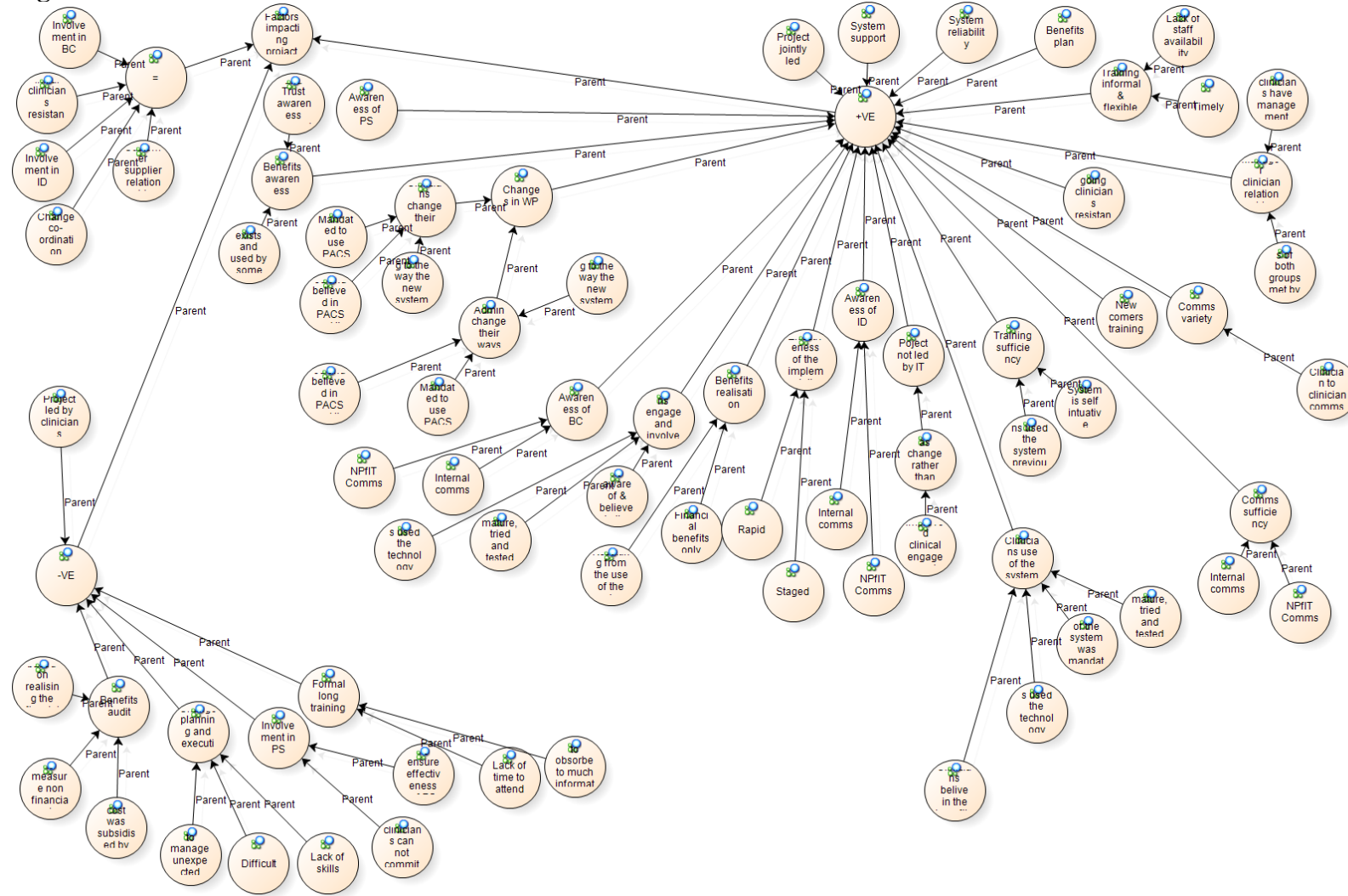
NVIVO was used as a tool to aid the data analysis through an effective data reduction technique. The outcome of the data reduction from NVIVO is illustrated in figure 12. NVIVO illustrated the data in hierarchical structure, through the use of father/child relationships. It also aided the researcher to explain, by using the coded data, the causes of a particular phenomenon.

For example one of the factors that was supported by the majority of the interviewees was the awareness of benefits. In NVIVO this was represented by a direct connection between the positive factors circle and the awareness of benefits circle, indicating that the awareness of benefits was a positive factor (supported by the majority), and that the positive factor circle is the parent and the awareness of benefits circle is the child. The reasons for the majority support to the awareness of benefits factor (technology maturity, internal communication, NPfIT communication, previous use of the system), were represented in NVIVO by direct connections between the awareness of benefits circle and the four circles representing these reasons. NVIVO also showed that there is a father child relationship between the awareness of benefits factor and the four reasons.

The ten themes that were used in the interviews were used here as the main headings to explain the data.



Figure 12 Greater London Trust PACS



## Theme 1- Investment decision and business case

In this theme number of questions were discussed, including involvement and awareness of the investment decision and the business case. These questions were asked in order to gain an understanding of the level of engagement and awareness of these early activities of the project, and to assess their impact on project success.

The level of awareness of the initial investment decision and the PACS business case was good. The good level of awareness was achieved due to the fact that there was a national awareness campaign about PACS, together with various internal communications. Two clinicians were not aware of the initial investment decision; they were the A&E consultant and the consultant physician. Those who were not aware of the PACS business case included the A&E consultant, the urology consultant, the consultant physician and the A&E sister.

The majority of the interviewees were not involved in the initial investment decision or the development of the business case. The director of radiology services and the three managers were all involved in making the initial investment decision and the development of the business case. The project manager described the reason and the background to the investment decision: *“We were actually approached by the national programme, that there was this system and we were also being pushed at the same time by clinicians to implement a more modernised system to view X-rays throughout the Trust. “*

The decision-making process in this project was almost superficial, as the main decision to invest was taken by the government through the NPfIT, and NHS organisations were expected to endorse this decision. However the organisation had the flexibility to determine the implementation timescale, which was what this group did. The PACS project manager described the process of making the initial investment decision and the development of the business case by saying, *“Usually you need to identify the need first and then produce a business case which is then taken to a Board for approval, whereas in our case, I think the approval was kind of already there and then we had to write the business case to actually back-track and match the approval process and the funding allocation as well.”*

The low level of involvement in the development of the business case could also be due to the following reasons:-

1. The business case was complex, technical, and required special skills to construct it.
2. The business case had to be developed using a standard national template that was partially populated, hence limiting the level of the required input.

In summary there was a good level of awareness of the business case and the investment decision, suggesting that these activities were well publicised. However there were only a few who were involved in making the initial investment decision and the development of the business case.

## Theme 2 – Project structure

In this theme a number of questions were discussed, including involvement and awareness of the project structure, and the role of clinicians and IT in leading this project. These areas were examined to gain a deeper understanding of those involved in the management structure, their roles within it and the leadership of the project.

The composition of the project board and the project group indicated, as explained earlier, a wide engagement from the organisation, including clinicians, managers and IT. Furthermore other external stakeholders were also represented in the project management structure, including the supplier and the NPfIT. The project manager stated, *“In terms of project structure we had a working group set up, which basically did all the ground-level work in terms of gathering in the information as to what equipment needed to go where; the training requirements; the input from clinical leads as to what types of equipment or what types of screens they wanted within the PACS system. That was basically all done by the working group and then we also had a PACS Board set up as well for just making key decisions and keeping the momentum going and channelling through any key issues and risks.”*

The majority of the interviewees were aware of the project structure and involved in some way in the project structure. Four clinicians were not involved in the project structure including the rheumatology consultant, the A&E consultant, the consultant physician and the urology consultant. However only the rheumatology consultant was not aware of the project structure.

It is clear that the level of awareness was higher than the level of involvement, which was expected. The lower level of involvement was understandable as there were limited number of staff that could be involved in the project management structure, otherwise the structure would not be effective or manageable. Furthermore, most clinicians were not able to commit time to attend the meetings as they were under huge pressure to deliver various government and organisational targets.

The purpose of the other three questions in this theme was to determine which professional group led the project. There was a majority agreement that indicated that this project was led by clinicians, and that IT played a supporting role. Four clinicians did not answer the questions on the project leadership; they were the director of radiology services, the A&E consultant, the consultant physician and the urology consultant. Those who believed the project was led by clinicians included the clinical director of surgery, the A&E sister, the SRO and the project manager. The A&E sister said, *“It was led most definitely, or I felt that it was being led, by radiology. And I mean yes obviously IT were involved, putting extra screens in for us and all that sort of thing, but it was radiology that led the project.”*

In summary there was a good level of awareness and involvement in the project structure and the majority believed that the project was led by clinicians and not IT.

### **Theme 3 – The implementation approach**

This theme examined the effectiveness of the implementation approach and the support arrangements that were put in place. The findings aided the researcher to determine the impact of these areas on the project outcome.

This project was implemented in stages. There were at least three stages to this project, initial engagement and requirement definition, planning and implementation. Furthermore the project was implemented in a phased approach. First the project was implemented across small area of the organisation in one site, then it was extended to the rest of this site and finally the project was implemented at the second site. The clinical director of surgery described the implementation as “*done in phases.*”

However the pace of implementation was rapid, as the full implementation was completed within five months (three months were used to install the communication link between the two sites). All the interviewees believed the implementation approach was good. The rheumatology consultant said, “*I don’t think there’s been much disruption... I think the implementation was fine to be honest.*” The radiology manager said, “*I think that the implementation went very well.*” The SRO described the overall implementation approach and its effectiveness: “*We did it department by department and site by site. So we did the Greater London Trust site first, we started off in radiology and A&E; then we expanded out to theatres and the wards. And then following that, I think there was a gap of about three months, we then implemented at the Mount Vernon sites. And the departments at Mount Vernon are quite small so we just did that in one big bang. I think it went magnificently, because we had an initial project plan for when we wanted to implement PACS, we hit the date in the project plan and we delivered it on budget as well.*”

On the areas of system support and reliability, all the interviewees believed that the support arrangement for this project was effective and the majority believed that the system was reliable. Only the consultant physician believed the system was not reliable. Her answers could be down to the fact that she was interviewed on a day when the system was down. However this downtime was not related to the PACS system but to the IT infrastructure. The rheumatology consultant said, “*I didn’t have any problem, it didn’t seem to crash very much... I think it works, it’s a quite robust system*”

In summary the implementation approach was effective, and the implementation was done in stages and rapidly. The system was reliable and system support was available.

### **Theme 4 – The role of the clinicians**

This theme examined clinicians’ roles in this project. Clinicians’ use of the system, initial and ongoing resistance, and clinicians’ engagement and involvement in this project were examined. Clinicians represented the great majority of the system’s users, and therefore their role in supporting, using and owning the system was critical to the project’s success.

Overall this theme received positive support from the interviewees. Clinicians' engagement, involvement and use of the system was supported by all the interviewees. The result suggested that there was limited initial resistance to the project, which was reduced after implementation. The A&E consultant, the consultant physician and the radiology manager believed that there was initial resistance by clinicians. However only the consultant physician believed that clinicians were still resisting currently.

The A&E consultant said, *"As I say, I know some of the physicians were resistant because they thought the quality of the films would not be sufficiently good for them to access the film accurately. And I know one of the chest physicians [...] was a bit concerned. But it's like all new things, once you get used to it you see that actually the perceived fear doesn't really exist."* The A&E nurse explained the reasons behind clinicians' resistance: *"Yes! We do have resistance if we don't see there's a benefit. As soon as ...certainly for A&E if we see it's a benefit then there's no problem, and if you see it's not a benefit, and it's just a case of we've got to do another six pages of paperwork, that will be resisted absolutely. So it does depend entirely on how it's presented, how it's actually sold to us in one way, but we have to appreciate that this is going to be a benefit to us as well as the patient."* She stated that there had been no resistance to this project because the benefit could be seen.

The urology consultant stated that there had been no resistance to the project *and gave the reason as "By the time you've gone through our clinics and had so many x-rays missing for patients, anything that could stop x-rays being missing has to be a good thing."*

The interviewees gave number of reasons for the high level of involvement and endorsement by clinicians. They included:

1. PACS was a mature, tried and tested technology
2. Clinicians were aware of, and believed in, the benefits of the PACS system
3. Some clinicians have used the technology in other organisations

The initial limited resistance to the project by clinicians was attributed to the following reasons:

1. Previous bad experience with technology
2. Fear that the use of the new system could result in spending less time with patients

The rheumatology consultant said, *"I think most people have seen that the advantages of PACS are quite clear cut actually, I don't think people are resisting it. My impression is everybody sees it as being quite positive."* The clinical director of surgery described the level of enthusiasm to the project: *"In the surgical division everybody wanted it; there was no question about quibbling. What the doctors were more interested in was, how quickly can we get it."* The SRO was very clear that there was no resistance to the system, he said:

*There wasn't one area of the Trust which resisted its implementation. Because we've got to implement IT projects where it's going to make the clinicians' life easier, because the only reason why they're resisting to change is if they've got to do more work or if it's not in the best interest of their patients. And with PACS we haven't cancelled any operations or clinics due to lack of x-rays being available, because they're all there we've had no downtime of PACS. And there were constant complaints pre-PACS about, "Not seeing this patient because I haven't got the x-rays in clinic." So the clinicians completely signed up for PACS because they knew what the benefits could be. And that's part of the communication strategy as well.*

In summary this theme was well supported by the interviewees, and there were indications that initial clinician resistance to the project existed but was drastically reduced following the implementation.

### **Theme 5 – Communications**

The questions that were explored under this theme included the assessment of the effectiveness of the communication that was associated with this project, as well the diversity of communication methods.

This theme was well supported by the interviewees, indicating that communication was sufficient and varied to suite different stakeholder groups. Only the clinical director of surgery did not answer the questions about communication, while the rest were positive about it.

A considerable amount of clinician-to-clinician communication was undertaken, which seems to have helped inform the wider clinicians about the project, and this in turn improved the level of engagement and involvement. Clinicians also preferred that communication to be delivered by clinicians, as they fully understood their requirements and work pressures. The Director of the radiology services described this kind of approach: *"We have a very good relationship at Greater London Trust between the radiologists and the clinicians, and most of this is mediated through clinical meetings with individual clinical teams. So pretty much every team in the hospital had a dedicated clinical radiology meeting. So we used those fairly intimate encounters to push what was happening with the PACS project around the hospital."*

The SRO described the variety of communication methods that were used in this project:

*We did regular PACS newsletter updates around what benefits people are going to see, what it will mean to patients, what it will mean to staff. [...]. We also had sort of road shows where the supplier would have a demo of the PACS equipment on site so that a wider audience could come and have a look at it and answer*

*questions. And that was mainly around clinicians asking how could you do this, how could you do that to rotate images and zoom in and things like that. So that was part of the communications strategy which we have for every IT project implementation.*

The rheumatology consultant said, *“I think everyone was aware it was coming.”* The A&E consultant was positive about the communication and said, *“Yes, I think we were kept reasonably well informed ... So for once in A&E we actually knew what was going on.”*

In summary this theme was well supported by the interviewees, indicating that the communication was sufficient and varied.

### **Theme 6 – Training**

This theme was used to understand how training was delivered to staff, and how effective it was.

All the interviewees were positive about the sufficiency of the training apart from the rheumatology consultant who did not answer this question. The A&E consultant said, *“We were all properly trained.”* All the interviewees believed that training was available for new staff. The radiology manager believed the time pressure that was put on them by the NPfIT had positively impacted the training. She explained, *“Because it was all such short notice, it actually worked out very well because the training for the whole Trust happened only a month before we went live, so it was all fresh in their minds.”* She also explained some of the problems they faced in delivering the training and how they were overcome. She said, *“Getting some of the hospital consultants to come for their training was probably the most difficult, so we went to them.”*

On the delivery method of the training, there was no support from the interviewees for long and formal training sessions. All the interviewees preferred the short and flexible training method, apart from the director of the radiology services and the A&E consultant, who did not answer this question. The reasons given for this included:

1. The system is self-intuitive and easy to use
2. There is limited time to attend training sessions
3. It would be hard to remember long list of short cuts, system navigation moves, etc.
4. It is more effective to receive a short training session supported by on the job training as and when required.
5. On the job flexible training will be timely and hence more effective

The consultant physician described how she learnt about some of system functionality. *“We learnt the frills from each other. So if I’m sitting down with the juniors looking at an x-ray, I might show them something they didn’t know and they might show me another button to press that I didn’t know about. And it’s much better*

*doing it that way because you learn what you want to know when you want to know it. And a day's course was ludicrous, absolutely ludicrous."*

The outcome of this theme suggested that training was successful and met the users' requirements. It was also clear that short and flexible training delivery was preferred by the users, and that informal learning networks were also very important.

### **Theme 7 – Benefit Realisation**

A number of areas have been explored under this theme, including awareness of benefits by staff, the systems and plans that were used to realise and monitor the benefits.

This theme received positive support from the interviewees apart from the area of benefits measurements and audit, which users did not believe it was well managed.

All the interviewees were aware of the benefits of the project and believed that these benefits were realised routinely. The A&E consultant said,

*'We need big films otherwise you can't see anything.' Well of course you can, it zooms in, it zooms out, it does everything you want. And it's an absolute boon down here, you don't have to keep walking to illuminated boxes on the wall to look at the x-rays, you can look at previous x-rays and make comparisons, you can look at reports. And what's more you can get the SHO in orthopaedics or surgery to look at one of your x-rays somewhere else in the hospital and tell you whether they think they have any concerns about it or not. And that is absolutely magnificent."*

The consultant physician described the benefits and a patient's experience of the PACS system:

*Well the key benefit is being able to see an x-ray within minutes of it being done, even if it's being done at Mount Vernon. One of my patients was really impressed, because she'd just come from Mount Vernon where she had an x-ray and I was able to sit down and say, 'Well here's your picture and look, this is what's happened.' And she thought that was really impressive. So it's undoubtedly speeded things up. The clinician can see the picture anywhere in the hospital; so even if the patient's on Grange Ward, I could in theory, look in my computer in my office or in the clinic. There is far less likelihood of it being lost. You can compare films side by side, you can manipulate the x-ray to make it lighter or darker, or rotate it, or blow it up, or make it move so that you can get more out of the picture; and I think that's useful. It's certainly speeded things up.*

The clinical director of surgery described the benefits: "We would clear out vast amounts of space that were being occupied by envelopes and envelopes of x-rays. You



*would free-up people from doing wasteful time just looking for films... And I can do that anywhere in the hospital without having to say to my secretary, 'Could you please find the x-rays for this patient.'*”

The majority of the interviewees were aware of the benefit plan that formed part of the business case. The consultant physician and the urology consultant were not aware of the benefit plan. Many of the clinicians explained that this was a key factor to secure their personal support to this project. The majority of the interviewees believed that the area of benefits realisation audit was not managed effectively. However the SRO and the Rheumatology consultant believed that benefits realisation audit was managed and was taking place.

The SRO described the benefits realisation, saying, *“We’ve got a very prescriptive benefits realisation plan, which is monitored methodically within operations... we bring back to the Board, either 6 months or 12 months later, an update on the benefits realisation plan.”*

Many interviewees described the difficulties in measuring or auditing the benefits; they also questioned the value of this activity. The radiology manager described her anxiety about auditing the benefits in her department. She explained that it wasn’t in their interest to measure the achievement of benefits and share the outcome with the organisation. She said:

*It adds no value to my department and the way I run the service. And at the moment, it’s great because the whole world wanted to know what our benefits realisation was so they could tick little boxes at national level and stuff. I could take a whole month out and do this properly, but at the end of the day, yeah I suppose it would be nice to know that we’ve improved efficiency in the hospital by 1, 2, 3, 4, 5% maybe. But it’s not going to change the budget I get, it’s not going to change the number of staff I get; if anything they’ll try and take staff away from me if I tell them that we’re being more efficient.”*

The A&E consultant said, *“We should do it, we are trying to do more audit in the department, but relative to our work load, in my view, we don’t have enough medical staff, we don’t really have enough nursing staff, we have a significant shortage of space, so to be honest every day here is survival and we don’t get to the luxury bits.”*

This indicated that the wider benefits to the organisation and to individuals within the organisation could have been explained better. It also showed that there was a fear factor or mistrust between the middle managers and the senior managers that could have negatively impacted the realisation of benefit.

What the organisation was able to determine and measure were the financial benefits, and these were achieved, including the savings on the consumables, the reduction in the number of admin staff, etc. On the other side the rest the of benefits that have been identified in the business case, such as better interaction between the patient and the clinicians, improved communication between clinicians, etc., where not

measured but every clinician who was interviewed was able to describe how such benefits are realised routinely. In summary this organisation has realised and measured the financial benefits, and realised but not formally measured the non-financial benefits. The only evidence available to support the realisation of non-financial benefits is the daily experiences of clinicians and managers as they were described in the interviews.

The SRO criticised the process of developing a rigid benefit realisation plan at the outset. He said, *“Were we too pessimistic on the benefits we could have realised just to fit the business case? We often want to just stop once we’ve matched the figure, that equals paying for it, and so should we be looking for more.”*

It was clear that the findings from this case study suggested that even though there was no formal measurement of the benefits, the organisation was content that they were achieving these benefits. This was not the same as the formal approach of benefits measurement suggested by the literature.

In summary there was a good level of awareness of the benefits and the plans. The interviewees believed that the benefits were routinely realised but they were not audited or measured. Evidence were available to support the achievement of the financial benefits but not the rest of the benefits.

## **Theme 8 – Change management**

In this theme the areas that were explored were the changes in working practices that have resulted from implementing this project, the effectiveness of planning and executing these changes, and the co-ordination between the various change initiatives in the organisation.

All the interviewees believed that changes in working practices were achieved as a result of this project. Two factors attributed to the changes in working practices. Firstly the use of the new system was mandated by the organisation, and staff had to change their old ways of working in order to use the new system effectively. Secondly staff believed that this was a better system for them, their patients and the organisation.

On exploring the changes in working practices it was apparent that most of the changes were the result of the use of the new system and the new technology; therefore they were closer to the technology rather than the wider working practices relating to the management of the patient journey. The radiology manager described some of these changes: *“We’ve changed a lot in the secretariat because they haven’t got great films to lug around, they just plug into PACS.”*

However very few interviewees answered the other questions relating to the management and the co-ordination of change. The SRO, the radiology manager and the director of radiology services believed that the change was well managed and executed, while the project manager did not think so. The rest did not answer this question. The director of the radiology services described the management of change associated with this project by saying:

*I guess a project like this is all about change. Management of change is not easy and people feel threatened by change, and that was why we were very careful with our project to choose the clinicians that we thought would a) benefit most from PACS and b) be the best champions amongst their colleagues for PACS. If you speak to the chest physician who sat on our project board he will without prompting use the expression 'It's the best thing that's ever happened in radiology.' And he believes that, and he has persuaded his colleagues of that. I think that the guys who stood in the background and were fearful have had their worries put aside since it's been up and running. We are quite good, as radiologists, at accepting change, but even so some of us found this quite a stressful transition. Were the pictures going to be good enough, particularly a chest x-ray? I mean after all this time the chest x-ray still remains the one arbiter of quality. Am I going to miss subtle interstitial lung disease on a chest x-ray? So we all had our anxieties, but I think they've been allayed by the realisation of the project. I wouldn't want it any other way.*

The SRO believed that the change was well co-ordinated with other change initiatives while the radiology manager did not think so, and the rest did not answer this question. The SRO said:

*Yes we did co-ordinate, I mean what we've got is a programme structure where we plan our work, not only just for the programme team, but for the IT team to make sure that we do deploy IT projects both in line with what capacity we've got within IT and the programme team, but also what capacity's out there within the organisation to manage the change of programmes. So at that time we had PACS going on, we were preparing for a new pathology system and a few other things going on, but we made sure that they were phased implementations. So that meant having some difficult conversations with suppliers that, 'No we won't go live to meet your financial income streams, if we want to go live as quickly as possible we need to make sure that we've got sufficient resources to support go live and the change.'*

In summary there were changes in working practices but in the main these changes were close to the technology rather than across the patient journey. There was lack of knowledge or awareness about the management of change.

## **Theme 9 - Project Outcome**

This theme was used to determine the interviewees' overall assessment of the project outcome. Measures of project success usually include whether the project has been completed on time and within budget, however such measures were not directly

used here as most of the interviewees were unable to answer them. This was mainly due to the fact that this project was subsidised by the government, and the financial arrangement and the overall cost were not very clear to staff. Therefore a more direct approach was used to determine the interviewees' views on the project outcome. Two questions were asked in this theme. First they were asked if the project was successful or not, and secondly they were asked if they had the option to go back to the old system, would they do that.

All the interviewees agreed that this was a better system than the previous one, and therefore they would not wish to go back to the old system. All the interviewees believed this project was successful apart from the urology consultant who believed it was too early to judge the project outcome.

The A&E consultant described his enthusiasm for PACS: *“I think it’s truly wonderful. It’s easily accessible. PACS is not a problem down here, it’s an asset.. PACS is very successful, I don’t think anyone out there would go back to films.”* The radiology manager confirmed her department support to the system, *“All the radiographic staff realised that PACS was the way forward for us a long time ago.”* The clinical director of surgery explained why the project was successful, saying *“The fact is I think that nobody wants to go back to the old system again. It is like the difference between having a typewriter and a word processor: would anyone use a typewriter nowadays? No, word processor. Why? Faster, quicker, this, that and the other, transferable all over the place and that’s the sort of concept you’re dealing with.”* The Director of the radiology services confirmed staff commitment to PACS, saying, *“I’m not aware of any clinician who would now want to be anything other than PACS enabled.”*

In summary there was overwhelming support indicating that the PACS project was successful and users preferred PACS to the old system.

## **Theme 10 – Stakeholders Relationships**

In this theme the customer-supplier relationship and the clinician-manager relationship were discussed.

Only four interviewees answered the question relating to the customer supplier relationship. Many of the interviewees were not able to answer the question due to the fact that they did not have any dealing with the suppliers. The SRO believed that the relationship was effective, while the clinical director of surgery, the project manager and the radiology manager believed that the relationship was not effective. the SRO dealt only with the supplier at a higher managerial level rather than at the operational level, and therefore was not aware of the difficulty users had in liaising with the suppliers to resolve some of the operational problems. However those who had to liaise with the suppliers to resolve operational issues were not positive about the effectiveness of the relationship.

It was clear that the customer supplier relationship was very complicated. Although the system (PACS) was implemented at this organisation, contractually they

were not the customer. Although the direct system owner/developer (system supplier) was the one that implemented the system at the trust, contractually they were not the supplier. The customer was the NPfIT and the supplier was the prime contractor or the local service provider (LSP).

This complex contractual arrangement made it difficult for the organisation to liaise directly with the system supplier to resolve operational issues. The organisation had to go through number of stages before their request for support or help could reach the appropriate authority. This made managers and clinicians very frustrated with the NPfIT and the LSP. The Project Manager described these problems, saying *“There was a lot of delays at the start because we weren’t allowed to liaise directly with Phillips and every issue and every risk, basically, had to go via BT, and we felt that that actually slowed things down for us. In addition to that, BT’s technical knowledge on the product was limited.”*

The second part of this theme was concerned with the clinician-manager relationship and the impact that this project has made on it. The majority of the interviewees believed that the clinician manager relationship was good and was not impacted by this project. The clinical director of surgery, the consultant physician and the radiology manager did not answer this question. However there were some interesting views from some of the clinicians that indicated tension between the two sides existed. The A&E consultant explained that junior doctors and middle grade doctors were not generally aware of the tension between the clinicians and managers around issues such as money and other resources. He summarised the clinicians views as follows: *“There are a few who think that the managers are just here to save money and close the hospital, and we are here, knights in shining armour, to heal everyone and send them home safe and sound, and probably the reality is, it’s somewhere in the middle.”* Other clinicians describe the tension between clinicians and managers, about money, resources and targets, as part of the day to day job, and this project became part of the day to day job, so in reality it did not increase the tension between the two sides. Still others believed that the system has improved the relationship as the managers have supported and resourced this project, which was needed and wanted by the clinicians.

In summary the customer supplier relationship was complicated, due to the complexity of the NPfIT contractual arrangement with the suppliers, which made it difficult for the organisation to have a direct access to the system supplier. However there was a majority support suggesting that the clinician-manager relationship was good, despite the existence of some tension between the two sides about resources.

## **2.6.3 The Central London Trust**

### **2.6.3.1 Background**

The Central London Trust decided to implement the NPfIT PACS system during 2005, and had the full business case developed and approved by the trust's board and the strategic health authority during the early part of 2006. The implementation of PACS started immediately after the approval was granted. The initial go live date was planned for April 2006., However this was delayed to August 2006, for contractual reasons between the NPfIT and the prime contractor. The interviews were conducted between December 2006 and February 2007.

The trust business case recognised the role of PACS to improve the delivery of health care services. It was also a key solution that supported the trust's strategy to be a paper-light organisation. The use of PACS was part of the trust's approach to reducing the costly physical storage space that hard X-ray films and radiology reports occupy.

Just prior to implementing PACS the trust replaced their old radiology (RIS) system with a new one that was compatible with the PACS system. The use of the new RIS enabled radiologists to enter their result reports directly into the system, initially via the keyboard, but this will eventually be through the use of voice recognition. It also enabled other clinicians to view the results reports immediately after their creation, hence removing the dependency on paper records.

The trust created a PACS project board that was responsible for overseeing the implementation of the project, performance managing the project, developing the necessary plans and assessing progress against plans. The project board was chaired by The SRO (Senior Responsible Owner), who was the executive director of ICT (Information Communication and Technology). Members of the group included the head of radiology services, another senior radiologist, and a few other clinicians from different departments including nurses. Managers were represented through the SRO, the radiology service manager and the IT manager. An operational group was also created to manage the day-to-day implementation of the project, it also had clinicians and managers represented. NPfIT and supplier representatives attended the meetings of both groups.

The PACS project board was accountable to the "Transforming Central London Trust" board, which was chaired by the chief executive and was responsible for co-ordinating and performance managing all the change initiatives and programmes across the trust.

Central London Trust is a general acute hospital that diagnoses and treats a range of adult and paediatric conditions. The trust is the only NHS trust in to treat patients at every stage of life, from conception to care of the elderly – a total of around 40 combined specialties.

This trust is a high performing organisation and has, for the past three years, achieved the highest possible scores awarded by the department of health (3 star rating). The trust has a history of supporting and implementing information technology solutions to support the delivery of health care services. The chief executive of the trust strongly believed in the role of information technology to improve the quality of care. He was a member of the community-wide Health Informatics Steering Group and was the chair of the Information Management and Technology strategy group for the former Chelsea and minster Health Authority. The trust also had an experienced executive director leading the IT department.

The trust had committed sufficient resources, as indicated in their business case, to implement the PACS project. A dedicated training team and an experienced external project manager who had implemented PACS elsewhere were put in place to support the implementation.

Recently Central London Trust became part of the Imperial College Healthcare NHS Trust (ICHT), which was created in October 2007 following the merger of Central London Trust NHS Trust (SMH) and Hammersmith Hospitals NHS Trust and integration with Imperial College London (IC).

The strategic objectives of the trust for April 2008-March 2011 are listed below and they feature investment in technology to improve health care services. Furthermore one of the trust's service priorities for the coming years is imaging, and the use of a modern PACS system will be key to delivering and improving this.

1. Provide the highest quality healthcare to our community
2. Be the hospitals of choice for patients
3. Attract and retain a world class workforce
4. Develop a modern environment through investment in facilities and new technology
5. Ensure excellence in the use of our resources
6. Work closely with PCTs and other partners in shaping the delivery of healthcare to our community
7. Be a world leader in research, teaching and education
8. Involve patients and the public in the decisions which shape our
9. Achieve Foundation Trust status

#### **2.6.3.2 Explaining the data**

Ten members of staff from Central London Trust were interviewed. Their profile is discussed below and summarised in table 16 and listed below.

- A. Urology Consultant
- B. Director of Radiology Services
- C. Radiology Consultant
- D. Consultant Neurologist
- E. Chest Consultant
- F. The A&E Registrar
- G. Gynaecology Cancer Nurse
- H. Radiology Nurse

I. Director of ICT

J. Admissions Secretary

The urology consultant was a senior clinician and previously held a senior managerial position. He left his managerial position due to his frustration with some management practices of other senior managers. He did not agree with the NHS's accountability arrangement and the target-driven care. He was not a great supporter of information technology and believed that clinicians could either provide care or use information technology, but not both. He was a regular user of PACS. His views were generally negative and critical of this project and other initiatives.

The director of radiology services, was the clinical lead for the project, and led a communication campaign for clinicians. She provided radiology services to another trust that was already using PACS; therefore she was very knowledgeable about the potential of the technology. She was realistic in her views and believed that the project was successful, but highlighted number of problem areas within the project. She was a heavy user of PACS.

The radiology consultant was a senior consultant and fully involved in the management of the project. She was a strong supporter of the project, believed the project was successful but identified areas of concern. She was a heavy user of PACS.

The consultant neurologist was not involved in the early activities of the project. He supported the project and believed it was successful, and generally he did not have strong views on any of the discussed issues. He was a regular user of PACS.

The chest consultant was a senior consultant who was involved in the early activities and the management of the project. He was also involved in the NPfIT in relation to PACS across London. He was a heavy user and strong supporter of PACS.

The A&E registrar was a middle grade doctor who had joined the trust few months before the PACS go live date. As a result she was not able to answer many of the questions. She was familiar with PACS as she had used it in another hospital. She was a regular user of PACS.

The gynaecology cancer nurse, worked closely with the director of radiology services across two hospitals. She was familiar with PACS as she used it in another hospital. She was a regular user of PACS, and believed the system was simple and very easy to use.

The radiology nurse did not have detailed knowledge of the PACS project that was expected from the radiology department clinicians. However she believed the project was successful and she was an occasional user of PACS.

The Director of ICT was an executive board member and the project SRO. He had been working at the trust for several years, and his views about the project were generally very positive. His views in some areas, such as the management of change, were opposed to those of the clinicians. He was not a user of PACS.



The admissions secretary was involved in a small way in the development of the benefits plan, but was not involved in the management of the project or the other early activities. He was an occasional user of PACS, but some members of his team were regular users. He did not have strong views about the discussed areas.

**Table 16 Interviewees' profiles at Central London Trust**

Name	Role	Comments	Use of the system
A	Consultant Urology	Previously held a managerial position, but gave it up due to frustrations with policies and targets. Most of his answers were negative.	Regular user of the system
B	Director of Radiology Services	The lead clinician in radiology and heavily involved in the management and promotion of the project. Provides services beyond this organisation.	Heavy user of the system
C	Consultant Radiology	Fully involved in the management of the project.	Heavy user of the system.
D	Consultant Neurologist	Senior consultant that provides services beyond this organisation.	Regular user of the system
E	Consultant Chest	An early supporter of the project, and involved in the initial consultation phase about PACS through the NPfIT.	Heavy user of the system
F	Registrar Accident and Emergency	Middle grade doctor, a user and already familiar with PACS through recently using it in a different hospital. She joined the trust just before the go live date.	Regular user of the system
G	Gynaecology Cancer Nurse	Works closely with radiology and the lead radiologist. Works across two different trusts, both of which have PACS, but not compatible.	Regular user of the system
H	Leading Nurse in Radiology	Part of the radiology department, but not as involved as other members of that department. Have a general rather than detailed knowledge of the system.	Occasional user of the system
I	Director of ICT	Project sponsor. Executive member of the board. Great advocate on the use of technology to support the business and the delivery of services.	Not a user of the system
J	Admission Secretary	Involved in benefits planning phase at the earlier stages of the project. Does use the new system on occasion, but some of the staff he works with are regular users of it.	Occasional user occasional user

The data were categorised and summarised in the same way as that of the Greater London Trust case. The answers of all the interviewees were coded as Y, for positive answers, N, for negative answers or left blank for no answers. The result is summarised in table 17.

The answers of two interviewees stood out from the rest. Most of the senior urology consultant's answers were negative and his comments were critical of the management and the introduction of information technology solutions. This clinician was not engaged in, or involved with, this project, and felt that he should have been consulted about this project in advance. Therefore his answers generally were not supportive of this project or its outcome. His profile should explain the reasons for his answers in general. The A&E doctor, was not able to answer many of the questions relating to the early activities of the project, as she joined the trust just after the go live date.

**Table 17 The full interviewees' answers given as Y or N, at Central London Trust**

Themes	Areas	A	B	C	D	E	F	G	H	I	J
BC & ID	Investment Decision Involvement	N	Y	Y	N	Y	N	N	N	Y	Y
	Investment Decision Awareness	N	Y	Y	Y	Y	N	N	Y	Y	Y
	BC Involvement	N	Y	Y	N		N	N		Y	Y
	BC Awareness	N	Y	Y	N	Y	N	N		Y	Y
PS	Project Structure Involvement	N	Y	Y	N	Y	N	N	N	Y	N
	Project Structure Awareness	N	Y	Y	Y	Y	N	N	Y	Y	Y
	IT Led		N	N	N	N			N	N	
	Clinician Led		N	Y	Y	N			N	N	
	Jointly Led		Y	N	N	Y			Y	Y	
Implementation	Implementation Approach Good	N	Y	Y		Y			Y	Y	Y
	System Support Available	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	System Reliable		N	Y	Y	Y	Y	Y	Y	Y	
Clinicians	Clinicians Use the System	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Initial Clinicians' Resistance		N	Y	N	Y		N	Y	N	Y
	Clinicians' Resistance Now	Y	N	Y	N	N	N	N	N	N	N
	Clinician's Engagement & Involvement	N	Y	Y	Y	Y		Y	Y	Y	Y
Communication	Sufficient Communication	N	N	Y	Y	Y		N	Y	Y	Y
	Different Methods of Communication		Y	Y	Y	Y			Y	Y	Y
Training	Training Sufficient	N	N	Y	N	Y		Y	Y	Y	
	Formal 1 Day or Longer Dedicated Training					N			N	N	
	Informal Short and Flexible training			Y		Y		Y	Y	Y	
	Newcomers Training		Y	Y			Y		Y	Y	
Benefits	Awareness of Benefits	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Benefits Realised Routinely	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Formal Benefits Plan in Place	N	Y	Y		Y		N	N	Y	Y
	Benefit Realisation Audit	N	Y		N	N		N	Y		
Change	Changes in Working Practices	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	Changes Well Planned and Executed	N	N	Y		Y		N		Y	N
	Coordination with Change Initiatives	N	Y	Y						Y	
Success	Would They Go Back to Old Systems		N	N	N	N	N	N	N	N	
	Project Successful	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Stakeholders Relationship	Customer-Supplier Relationship Good		N	Y						Y	
	Manager-Clinician Relationship Good	N	Y	Y	Y	Y				Y	Y

Similarly as for the Greater London Trust case, NVIVO was used for the Central London Trust case as a tool to aid the data analysis through an effective data reduction technique. The outcome of the data reduction from NVIVO is illustrated in figure 13.

For example one of the areas that has not been managed well was the audit of benefits realisation. Therefore benefits audit was shown as a child to the negative factors, the reasons that were given by the interviewees, for the lack of benefits audits were,

1. Difficult to measure benefits
2. No incentives to staff
3. Fear of loss of budget and staff

Therefore the above three points were shown in NVIVO, as children to the benefits audit.



## **Theme 1 - Business Case and Investment decision**

Half of the interviewees were involved in the initial decision making process. The director of radiology services, the other senior radiologist, chest consultants and the two managers were all involved. The clinicians that were involved were those who have been working with the NPfIT, or closely working with the PACS project at this organisation. These clinicians were impacted most by this system as they rely on the digital images to undertake their daily functions. The service director of radiology commented that she was “part of” the decision-making and the business case development.

The managers that were involved included The SRO, who was a senior executive, and another middle grade manager who was involved in the development of the benefit plan.

The decision-making process in this project was almost superficial, as the main decision to invest was taken by the government through the NPfIT, but each organisation had the flexibility to determine the implementation timescale.

A higher number of staff were aware of the investment decision and overall there was a good level of awareness. There was also a majority support to the level of awareness of the business case. This level of awareness was achieved due to the fact that there was a national awareness campaign about PACS, together with various internal communications. All the senior clinicians (apart from one), and the managers were aware of the investment decision. The senior urology consultant was the only senior clinician who was not involved in, or aware of, the investment decision. The reason for this becomes clear from examining his profile in table 14. The other two clinicians that were not aware were the A&E doctor, who joined the organisation just before the project go live date, and the gynaecology cancer nurse, whose lack of awareness could not be explained.

There was a low level of involvement in the development of the business case. Those who were involved were the two radiology consultants (one of them was the head of radiology services), and the two managers (one of them was the project SRO). The reason for this could be down to the following factors, as also mentioned for organisation 1:

1. The business case was a complex and technical document, and special skills were required to construct it.
2. The business case had to be developed using a standard national template that was partially populated, hence limiting the level of the required input.

In this organisation the business case was developed by the project manager with the support of a few key individuals such as senior clinicians from the radiology department, the SRO and a few other managers, including the director of finance. There was a moderate level of awareness of the business case amongst staff. This indicates that the development of the business case was carried out by a few individuals and was not communicated widely to staff.

In summary, there was a positive (majority) support to the level of awareness of the BC and the ID, suggesting that these activities were well publicised. However there was no majority support to the level of involvement in the investment decision or the development of the business case. This also indicates that user involvement in these early activities was limited and could be improved. The senior urology consultant felt strongly about the lack of user involvement and said, *“Nobody ever came and talked to us and said, ‘We want to implement this. How do you think we can best go about implementing it and improve your life, rather than make your life more difficult?’ And as always in the NHS people just do it without talking to any of us, the users, so there is no ownership for us. And then immediately you’ve got the disconnect, because we’ve got no ownership in it”*. While the interviewee’s profile could provide some insight into his comments, they also suggest that more could be done in this area.

## **Theme 2 – Project structure**

There was a low level of involvement in the project management structure. Those who were involved included clinicians who would be impacted most by this project, such as the two radiology consultants and the chest consultant. The director of information technology and communication was the project SRO.

As in organisation 1, the low level of involvement was understandable, given the limited number of staff that could be practically involved in the project management structure. And again most clinicians could not be expected to commit time to attend the meetings, given their workloads and other priorities.

There was a good level of awareness of the project structure. Those who were not aware of the project structure included the senior urology consultant, whose answer was in line with the rest of his answers and his profile to a large extent, the accident and emergency doctor, and The gynaecology cancer nurse.

The purpose of the other three questions in this theme was to determine which professional group led the project. There was a clear agreement that this project was not led by IT, and a majority support suggesting the project was jointly led by IT and the clinicians. The SRO was keen to ensure that this project was viewed as a change project rather than an IT implementation, and therefore he ensured that the IT team was not leading.

There was a low level of involvement in the project structure, which was expected, but a good level of awareness of the project structure. Staff did not view the project as an IT project. There was a majority support that indicated that the project was jointly led by IT and clinicians. The result also suggested that the project had a wider remit than technology, which could have helped to engage more clinicians. The project SRO said, *“We very much saw this as a change project rather than a technology project”*.

## **Theme 3 – Implementation**

There was a positive majority support that indicated the implementation was effective. The interviewees described the implementation as staged but rapid. However

the radiology consultants were critical of the management of the delay in the go live date. The SRO said *“PACS was implemented within radiology first, then was made available around the trust to any clinician who needs to look at an image. The start of the implementation was delayed by four months, but then it was implemented rapidly across the trust within 5 to 6 weeks.”* The lead clinician in radiology indicated her support to the implementation approach by saying, *“Doing it in stages made it relatively easy to do.”* Another senior clinician The Senior Radiologist, made the same assessment of the implementation by saying that the implementation *“didn’t happen in a big bang approach.”* However she was critical of the delays to the project and said, *“There was a huge delay in the implementation, which had enormous operational impact on the department.”*

There was strong endorsement that suggested system support was in place to resolve operational problems and there was a strong support also for the system reliability.

Overall people preferred the staged and rapid implementation of the project; however they criticised the lack of planning to manage the operational problems that resulted from the initial delay in implementing the project. The senior radiologist said, *“That’s probably beyond our control, but certainly it was a disaster, it was managed very badly, both by us and by BT I think.”* System support and system reliability did not seem to be of major concern to staff. This also suggested that issues relating to the technology were not usually the cause of the problems, but the wider planning and the change management were crucial to avoiding project failure. However this could be down to the fact that the deployed technology was tested, effective and reliable.

#### **Theme 4 - The role of clinicians**

There was a full endorsement to the use of the system, indicating that everyone who needed to use the system was using it, and that there was very little ongoing resistance to the use of the system. The senior radiologist said, *“Clinicians are absolutely supportive of the project”*. The chest consultant said, *“We, as a department, were very, very in favour of moving to the new system. Everyone I know uses it, all of the clinicians I work with use it, so it’s out there.”* The organisation mandated the use of the new system which also contributed to the high level of use.

There was some evidence that suggested initial resistance to the use of the system existed. However the level of resistance was drastically reduced once the system was in place and running. The leading Nurse in Radiology said, *“At first, yeah people were saying, ‘This PACS is no good, it doesn’t help us,’ but now, the same people are singing the other tune, they’re very positive about it and it’s easy going compared to the other system.”*

The initial resistance was due to mainly fear by clinicians that the new system would be a burden rather than a help. The senior urology consultant believed that the system slowed them down, and reduced the time they could spend with the patients. He said, *“So either you use me to see patients or you use me to access information, but you can’t have it both ways and still see the same number of patients. Either I’m spending that time with a machine or I’m spending it with a human being.”* His answers



indicates that he is not a supporter of the use of information technology in delivering health services and possibly fearful of using such technologies.

Clinicians' engagement and involvement received strong support. The chest consultant said, *"Obviously from this department's point of view, engagement and involvement was very high, because we have a real interest in it."*

The interviewees gave the same reasons as those in organisation 1 for this level of involvement and engagement by clinicians::

1. PACS is a mature, tried and tested technology
2. Clinicians were aware of and believed in the benefits of the PACS system that would positively impact their work.
3. Some clinicians have used the technology in different organisations

### **Theme 5 - Communication**

The sufficiency and the variety of communication received a good level of support, suggesting that communication relating to this project was effective. The Director of ICT (the project SRO) described the communication approach *"We had a communications strategy so there were various articles in our house magazine. Within the radiology department there were a lot of specific radiology department communications and question and answer sessions, dissemination through the Management Executive and the individual Directorate Management Boards and all of that cascading stuff."* A considerable amount of the communication was undertaken by clinicians, i.e. clinician to clinician communication, which seems to have helped inform the wider clinicians about the project. This in turn could have caused a higher level of engagement and involvement. Clinicians also preferred that communication be delivered by clinicians, as they fully understood their requirements and work pressures.

The NPfIT produced several communication materials including newsletters and videos, and had organised several seminars and workshops.

The effectiveness of the communication has been reflected in the high level of awareness of the initial investment decision, the business case and the project structure. Generally if the interviewees were aware of the project they responded positively to the communication questions.

Communication was effective and varied to suite different staff groups.

### **Theme 6 - Training**

There was a majority, including the SRO, the radiology consultant, the chest consultant and the two nurses, who believed that training was sufficient. However the urology consultant and the director of radiology services believed more training was required. The urology consultant said, *"I had no training, but I figured it out by just watching the juniors and how they do it, so that's not too bad. It's not actually a difficult system to use."* The director of radiology services felt that extra training was needed due to the delays in the go live date.

There was clear indication that the interviewees preferred an informal and flexible training to a formal, long and dedicated training. Many interviewees found that learning on the job from their colleagues was more effective, as the learning was very timely and relevant. The Chest Consultant said, *“Many staff learn through word of mouth from their colleagues.”* The interviewees also indicated that the system was easy to use, and some of them had already used such systems in different hospitals, so there was limited need for long formal training. *“It’s self-explanatory I think, it’s really easy to use, it’s idiot proof.”* (The gynaecology cancer nurse).

Those who were involved in managing the delivery of the training believed this was a difficult exercise. The Chest Consultant said *“Training was difficult; people don’t tend to go to training until it’s actually a problem in their backyard.”* Finally, several of the interviewees commented that in order for the training to be effective it must be timely. This problem was apparent in this project as some of the interviewees received their training early, as it was based on the initial go live date. However the implementation was delayed by several months and as a result the early training was not timely. The senior radiology consultant said, *“The training was quite good actually, but it took place with the go live date of April. So it took place in February and March and we went live in the end of July, by which time we’d forgotten everything.”*

Overall all, the training on this system was not a major concern, and the interviewees were content with the received training. However the issue of timing of the delivery of the training was raised.

## **Theme 7 - Benefits Realisation**

There was a strong level of awareness of the benefits and a strong belief that these benefits are being realised routinely. The high level of awareness could, in part, be attributed to the awareness campaign by the NPfIT and that the technology had been used by some staff elsewhere.

The interviewees were able to describe these benefits in detail. The senior radiologist, said, *“We understood the intangible benefits as well as the tangible ones.”*

*“Previously because the scan was printed onto hard copy it would then involve myself or one of the juniors chasing around radiology trying to find scans on a Friday afternoon that had been done but not reported. That could sometimes take half an hour, just to track the thing down. And now we just sit there in the doctor’s office on the ward and we can look at the scans literally two minutes after they’ve been done, so there’s lots of advantages”,* (The consultant Neurologist).

*“Films get dirty and they get bent, and a lot of the times you lose the film, you can’t match the patient’s notes with the films, whereas on the x-ray thing it’s there. The other thing is that you can talk to radiologists or other specialists from A&E and all they have to do is log on to a screen and then you’re talking about the same x-ray, so you*

*can access the images from wherever you are, talk to the right people about them without them having to come down. And so it makes things a lot easier. In the past you used to have to go round the hospital, find an orthopaedic consultant or find a radiologist, whereas now you just give the patient details obviously".* (The Accident and Emergency Doctor).

*"It's a better format, the reports are easier to read to how they used to be and we can back the reports up now with pictures so there's less room for error".* (The Chest Consultant).

Although the interviewees have confirmed that benefits were routinely realised, such benefits did not extend to the full patient journey. For example, the benefits did not extend to the General Practitioner who provides most of the patient care. This would be possible by enabling GPs access to the images and the results reports through an order communication or a community-wide PACS solution.

Those who were working closely with the project (the two radiology consultants and the SRO) and the admission manager were aware of the benefits plan. Their awareness was also down to the fact that they were also aware of the business case that contained the benefits plan. This may suggest that the benefits plan was not communicated widely, or used as a dynamic document to update and refine the management of benefits. The service director of radiology, who is a lead clinician on the project board, questioned the need for such a plan, *"The benefit plan did not help us to realise the benefits because the benefits are there. I think all the document does is make you put some numbers on it. The benefits happen regardless of whether there is a document telling you to do it."* This may suggest that the process for benefits management was not well understood. Also, the interviewees believed that the benefits were realised routinely, without using or referring to the benefit plan.

The lack of processes in managing the benefits was apparent, particularly in the areas of benefits audit and benefits measurement. This area received very low support. Two interviewees (the director of radiology services, and the radiology nurse) indicated that a small audit had taken place but the results had not been analysed. There was strong evidence suggesting that the financial benefits had been measured and realised; however the other benefits had not been measured, although the interviewees believe they have been realised.

*"The stuff that was costed here is loss of staff, obviously they normally sort films, and with not having film, not paying for film, those sort of things. And yes, we absolutely have benefits realisation for that and we've realised those benefits quite effectively I think. However reduction in time of junior doctors and junior doctors' assistants and clerical people outside of radiology; a reduction of time in looking for x-rays. That hasn't been officially costed because it's very difficult to cost that".* (The Senior Radiologist).

The lack of structured approach to measuring the realisation of benefits could be down to two reasons:

1. The fact that the initial investment was subsidised by the government, so the organisation did not need to justify the full investment.
2. Many interviewees believed that benefits were realised routinely and benefits plans and formal measurements will not help.

There was high level of awareness of benefits, and a strong belief that these benefits were being realised. However the process of benefits management does not seem to be managed effectively. The benefit plan was produced at the business case stage and was then shelved, and there was no effective audit of benefit realisation. There was also strong evidence that the financial benefits had been measured and realised and the interviewees were able to describe how the non-financial benefits were realised, but they had not measured or audited their realisation. The high level of awareness and the belief in the realisation of benefits seemed to have influenced the level of clinical engagement and involvement in this project. This has also enabled clinicians and other users to deal with different project problems more positively.

## **Theme 8 - Change Management**

There was a 100% endorsement that suggested staff have changed their ways of working as a result of this project and in order to realise the benefits. Two factors attributed to the changes in working practices: firstly the use of the new system was mandated by the organisation, and staff have to change their old ways of working in order to use the new system effectively; secondly, staff believed that this was a better system for them, their patients and the organisation.

On exploring the changes in working practices it was apparent that most of the changes were the result of the use of the new system and the new technology, therefore they were closer to the technology rather than the wider working practices relating to the management of the patient journey.

There was acknowledgment by senior clinicians that change management is complex and requires special skill set. *“Change was difficult. We started, and that is something that we could have done better... There were certainly times when some of the ANC [admin] staff didn’t really feel that they had been kept informed and that they really knew what they were supposed to be changing.”* (The Director of Radiology Services).

The way change was managed received very little support or endorsement. Staff believed that change could have been managed more effectively, to reduce the impact of the disruption during the implementation phase. There was little support to suggest that this change has been coordinated with wider change initiatives across the organisation. The lack of support for this area could be explained by the fact that many of the interviewee were not aware of the various change initiatives that were underway across the organisation. However the SRO, who is a senior executive, was fully aware of the

wider change programme across the trust, and he was clear that coordination of the various change initiatives had taken place.

The SRO described the change management process at the trust by saying:

*We already had a structure within Central London Trust that we use to manage change projects, and we very much saw this as a change project rather than a technology project, and we call that 'Transforming Central London Trust'. So that's a programme of work that has several projects under its management ... so clearly PACS was one of those, because we felt that the most significant element of it was that it would change the way clinicians did their jobs, and if we were to get the most out of it then people had to understand that and be prepared to change. I felt the co-ordination between the various change initiatives was very important, that this project fitted within an overall programme of work, so it didn't sit outside what others were doing in terms of, for example, process re-engineering the patient journey, which was another big project that was going on and clearly there was overlap between those two projects that we needed to get right. So that was the point of the programme and still is."*

Overall the changes in working practices required for the effective use of the system have been achieved; however, there was no evidence to suggest that the wider changes in the system, away from the use of the technology, have been achieved. The way change was managed and co-ordinated was not very effective. The level of disruption could have been minimised and the level of user satisfaction could have been improved, if the change had been managed effectively. This again points to the lack of clear processes to manage change effectively, and possibly the lack of skills in this area. Furthermore the view of the managers was clearly different from that of the clinicians. Managers felt that the change had been managed effectively, but clinicians did not.

### **Theme 9 - Project outcome**

In this theme two direct and clear questions were asked in order to assess the interviewees' views on the project outcome.

All the interviewees apart from the urology consultant strongly believed that this project was successful. *"The project is definitely successful."* (The Accident and Emergency Doctor). *"I think that the project was successful because I'm happy with the end result, very happy with the end result."* (The Chest Consultant). *"I think if you look at the wider scheme of things you have to say it was a success. Everybody is using it; it's improved things for lots of people, it's improved their working lives, it's improved the patient experience clearly."* (The Director of ICT and the project SRO). The senior urology consultant thought the project was not successful.

Everyone apart from the radiology consultant and the admission manager, who did not answer this question, strongly believed that staff preferred the new system to the old one, and that they would not want to go back to the old system. This was a clear endorsement that this project introduced a solution that was needed by the different staff

groups, and it had made improvements to their working lives. *“If you ask people to go back to the old system I think they would say ‘no way José, you keep the old system.’ This is beneficial to staff and the end users. I think it’s excellent.”* (The leading nurse in radiology)

## **Theme 10 – Stakeholders relationships**

There was little evidence available to make an assessment of the customer-supplier relationship. Many staff were not involved in dealing with the supplier, and therefore were not able to comment. However it was clear that the customer-supplier relationship was very complicated. As with organisation 1, contractually they were not the customer and although the system supplier was the one that implemented the system at the trust, contractually they were not the supplier. The customer was the NPfIT and the supplier was the prime contractor or the local service provider (LSP).

This contractual arrangement made it difficult for the organisation to liaise directly with the system supplier to resolve operational issues. This made managers and clinicians very frustrated with the NPfIT and the LSP. However they felt the direct system supplier was very helpful once the request for help had reached them. *“The fundamental issues with the Connecting for Health projects, we aren’t the customer in many ways. Connecting for Health is the customer and we don’t really know what to expect. The request for change that go into Connecting for Health is very tortuous.”* (The Senior Radiologist)

The effectiveness of the relationship between the managers and clinicians received a positive support, suggesting that this relationship was not bad. Furthermore many interviewees believed that this project did not negatively impact this relationship. The positive support for the effectiveness of this relationship came from the two radiology consultants, the chest consultant, the neurology consultants, the SRO and the admission manager. *“This project definitely did not create any tension between managers and clinicians. We get on reasonably well I think. I think this is definitely not something that’s led to any conflict. I can’t even imagine how it would have done.”* (The consultant neurologist). *“There was no tension, The SRO and the project team knew what they had to try to achieve”* (The Chest Consultant). *“I have not felt any tension between clinicians and managers as a result of this project.”* (The Admission Manager)

However the senior urology consultant, as expected, was very critical of the management and clinicians who occupy management positions. He explained that:

*There are clinicians that are part of the management structure, but they in general, in my experience, tend to make unilateral decisions, which are not cascaded to the rest of us mere human beings, and that’s a problem. Because sadly, managers are not responsible to... what’s best for the patient, they’re responsible to whatever target comes down from their superiors and from the government.*

There seemed to be limited tension between the managers and clinicians, no more than expected, and this project did not increase such tension. There was also clear

evidence that the customer-supplier relationship was complicated and unhelpful, and a more direct relationship between the organisation and the system supplier would be beneficial.

## **2.7 Cross Case Synthesis and Discussion**

### **2.7.1 Discussion**

The Greater London Trust and Central London Trust had similar profiles. They were both NHS Hospitals in London planning to implement different elements of the NPfIT products. Both organisations have been investing in developing their IT infrastructure and their clinical solutions portfolios. Greater London Trust was selected by NPfIT to be the first trust to implement the PACS solution in London, as they had already made plans to procure PACS prior to the arrival of NPfIT. The NPfIT also felt that there was a strong organisational commitment to implement this solution in Greater London Trust. The NPfIT was keen to ensure that the first implementation of PACS was successful, and they accordingly allocated extra resources to raise awareness, to support the implementation and to deal with issues during the implementation. However following the initial implementation at Greater London Trust, the level of support available to organisations was reduced to deal with the large scale implementation across London. The impact of the reduced resource allocation was apparent in the level of awareness and communication in Central London Trust compare to Greater London Trust. Furthermore the implementation at Greater London Trust was smoother and encountered less problems and delays, in comparison to Central London Trust.

### **2.7.2 Investment and Project Structure**

The level of involvement in making the initial investment decision and the development of the business case was low in both organisations. This was expected for various reasons that have been explained in earlier sections. The literature review provided evidence of the impact of the business case and the initial investment decision on the projects outcomes (Cabinet Office Report, 2000; McAfee, 2006). In general the findings from the two organisations were in line with the findings from the literature, that suggest the initial investment decision usually involves very few people and the business cases are focused on the technology and ignore the wider change required.

In Greater London Trust the level of involvement and awareness in the project structure was higher than at Central London Trust. This could be due to the fact that Greater London Trust already had in place a structure to implement the PACS solution prior to the arrival of the NPfIT, and the commitment from NPfIT to allocate extra resources in the areas of communication and implementation, to support the first PACS deployment. The reviewed literature suggested that the management of complex change should not be assigned to a single group. (Markus and Benjamin, 1997; Remenyi, 1999). The project structure that was put in place in each organisation included an operational group and a project board that reported to a corporate group. Each group had a good mix of representatives from management, clinicians, IT, the supplier and other external stakeholders. Therefore it appears that the project management structures avoided the dangers mentioned in the literature. This was also in line with the findings



from the literature that suggested stakeholder engagement as a very important issue that impacts project outcome. (Ward, Hemingway and Daniel, 2005; Byrson, 1998)

### **2.7.3 Project Leadership**

The project at Greater London Trust was led by clinicians, while at Central London Trust it was jointly led by clinicians and IT. Both organisations were keen to ensure that the projects were not dominated or led by IT, and as a result these projects had more appeal to clinicians because they were not perceived as IT projects. The clinical leadership in both organisations came from the radiology departments, which were most impacted by these projects. The literature review indicated that projects that were focused on IT, and defined by the organisation as technology projects only, had limited chances of success. (Cabinet Office Report, 2000)

The interviewees in both organisations were aware of the project's SRO, who in both cases was a senior executive and a trust board member. Both SROs had been working in the trust for over five years and were influential executives. This again seemed to have made a positive impact on the project outcome, as the SROs were able to secure the necessary resources when required, and communicate with the executives at the trust and the supplier level. The interviewees at both organisations stressed that the role of the project manager was a very important factor to achieving project success. This message was more persistent from Central London Trust as they had a very experienced project manager who had implemented PACS previously. This was in line with the literature. (The Cabinet Office Report, 2000; The Parliamentary Office of Science and Technology report, 2003)

### **2.7.4 Clinical Engagement**

The great majority of the interviewees in both organisations were very enthusiastic about the system and its potential. However, the majority of them believed that there was room for improvement to make the system more effective. The literature indicated that users can find faults in the best systems (Markus and Benjamin, 1997). However the findings here suggested that users were willing to overcome the system limitations because they believed in the project benefits, their positive impact on their day-to-day activities and the care of their patients.

The level of clinical engagement and involvement was strong in both organisations for reasons that were explained earlier. At Greater London Trust there was evidence to suggest that there was limited initial resistance to the project by clinicians, while at Central London Trust the interviewees' views were split. Both organisations indicated that the resistance to the project and to the use of the system was minimised following the implementation. This was due to the fact that the initial fears from clinicians, including the potential delays in running their clinics or difficulties in using the system, did not materialise.

Both organisations believed that there were good levels of clinical engagement, involvement and use of the system. They also indicated that there was limited initial clinician resistance that was reduced after the implementation.

The reviewed literature indicated that clinicians are a powerful group within the NHS, and their resistance to any project would adversely impact its outcome. (Pettigrew, McKee and Ferlie, 1988; Audit Commission Survey, 2005; Hendy, Reeves, Fulop, Masseria, 2005) The two organisations secured the clinicians' support and commitment to the projects, and reduced the potential resistance from this powerful stakeholder group. This was a significant factor that influenced the project positive outcome.

### **2.7.5 Implementation Approach**

Both organisations believed that the implementation approach was effective, system support was available and the system was reliable. They described the implementation as staged and rapid. However Central London Trust believed that the management of the unexpected delays in the project was not effective, and as a result the level of disruption had increased. The findings from this area also suggested that issues relating to the technology were not usually the cause of the problems, but rather the wider planning and the management of change.

The literature suggested that a staged approach was important to achieving positive outcomes from IT-enabled change projects. (Markus, Axline, Petrie and Tanis, 2000; Isabella, 1990) Although the projects in these organisations did not follow a particular model, as described in the literature, they did not implement these projects in a big bang way, but in stages with rapid implementation. These findings were supported by the literature, which advocated that rapid implementations were more effective. (Tushman, Neman, and Romanelli, 1986; McDonald, 2000)

### **2.7.6 Communication and Training**

Both organisations believed that the communication was good and met their needs, and that variety of communication methods were used to suit different stakeholder groups. However the evidence indicated that the communication was more effective at Greater London Trust due to its first implementation status. Interviewees from both organisations stressed the importance of the clinician-to-clinician communication and believed this was an important factor in getting the clinicians on board. Hendy, Reeves, Fulop and Masseria (2005), pointed out in their case study across four NHS organisations that poor communication was one of the areas that caused problems in implementing NPfIT solutions.

All the interviewees at Greater London Trust believed that the training was effective and sufficient, however at Central London Trust there been a lower level of support. This was due to the fact that the training was not timely and the training delivery did not accommodate the delays in the project. Both organisations believed that the training was sufficient and was available to existing and new staff. Furthermore

they both indicated that the use of informal and flexible training was more effective than the use of formal and long training sessions. The use of the informal training networks was also important to users where clinicians were helping each other to explore the functionality of the system. Ward and Daniel (2006) argue that training is very important, but that on its own will not deliver the wider business benefits anticipated from the new systems. They also argue that training usually is not done well, or not sufficient, as IT training budgets are usually inadequate or get cut down. Krauth (1999) argues that one of the factors that contribute to project failure is the lack of user training.

### **2.7.7 Stakeholders Relationships**

Both organisations acknowledged that there was some tension between the managers and the clinicians, which were mainly around the availability and the utilisation of resources. However they both believed that the relationship between the two groups was generally effective and this project did not increase the tension between these two groups. The reason for this could be explained by the fact that most of the clinicians that were interviewed were very senior and occupied management roles too. This made these clinicians more aware of the managers' ways of working and the pressure on the availability and the utilisation of the resources. Furthermore the funding for these projects were subsidised by the NPfIT and therefore the usual tension about funding was reduced.

The literature acknowledged the tension between the managers and the clinicians in the NHS, and explained the reasons for this tension. Davies and Harrison (2003) describe the differences between managers and clinicians as cultural divergence whereas McCartney, Brown, and Bell (1993) believed that the tension between the two groups was due to the complex reporting and accountability arrangement in the NHS, further complicated by the issue of professionalism. Others believe that the power and the autonomy enjoyed by clinicians were behind the tension between these groups. (Dent, 1995, 1998; Worthington, 2004)

The senior managers' views in both organisations were different from the clinicians' views in a few areas such as the management of change and the realisation of benefits. The senior managers were more positive and believed they had effective structures and approaches to managing change and realising benefits, while the clinicians believed these areas were not managed effectively.

The effectiveness of the customer supplier relationship was difficult to judge across the two organisations, due the fact that only a few of the interviewees liaised with the suppliers. However there was a consensus across the two organisations that the customer-supplier relationship was complex and the NPfIT contractual arrangement had added to this complexity. The interviewees preferred a direct relationship between the organisation and the supplier, which was not possible under the existing contractual arrangement. The Cabinet Office Report (2000) indicated that problems may occur between the suppliers and the government, and that the government does not have the skills to manage complex contracts with suppliers.

## 2.7.8 Benefits Management

Both organisations believed that there was a very good level of awareness of the benefits and some of the benefit plans; they also believed these benefits were routinely realised. Both organisations believed the measurement of benefits was not managed effectively. There was no formal structure to measure and audit the realisation of benefits across the two organisations, and as a result only the obvious financial benefits were realised and measured. Both organisations also acknowledged that measuring the non-financial benefits was difficult and complex. Key players across both organisations, such as the radiology manager at Greater London Trust and the director of the radiology services at Central London Trust, did not believe in the establishment of a formal benefit plan. The radiology manager at Greater London Trust described her concern about measuring and auditing the benefits, saying, *“It adds no value to my department and the way I run the service. And at the moment it’s great because the whole world wanted to know what our benefits realisation was so they could tick little boxes at national level and stuff. I could take a whole month out and do this properly, but at the end of the day, yeah I suppose it would be nice to know that we’ve improved efficiency in the hospital by 1, 2, 3, 4, 5% maybe. But it’s not going to change the budget I get, it’s not going to change the number of staff I get, if anything they’ll try and take staff away from me if I tell them that we’re being more efficient.”*

The SRO at Greater London Trust, who was a senior manager, believed that the realisation of benefits had been operationalised and was measured routinely. His views were at odds with most of the clinicians’ views.

There was extensive literature in the area of benefit realisation, and various publications were reviewed covering the methods of realising benefits, the implications of poor benefits realisation, and the reasons for failing to realise the benefits. Peppard and Ward, (2005) argued that most of the difficulties in realising the benefits stemmed from the lack of clarity at the start about the intended benefits, the ability to track and record these benefits, and ultimately deliver them. Most of the literature reviewed in this research suggested that a structured approach should be put in place to realise the benefit. However the literature also pointed out that measuring the benefits was complicated by the use of different types of measures that had different types of impacts on IT payoffs. (Devaraj and Kohli, 2000). Greater London Trust and Central London Trust did not follow a structured approach to benefits management and realisation as suggested by the literature. This could explain the reasons behind the organisations’ failure to measure the non-financial benefits. In their study of 24 business cases of successful project, the National Audit Office (2006) highlighted that management attention to the realisation of benefits was a key factor in achieving success.

It is clear in both case studies that the organisations have not fully exploited the systems following the deployment of the technology. This has resulted in the realisation of a limited number of benefits that are closely linked with the technology. In order for organisation to fully exploit the technology and innovate, they have to move beyond the technology deployment phase. According to Peppard and Ward, (2005) organisation needs to move from the problem solving phase to the innovation phase in order to take advantage of the full potential of the technology.

## 2.7.9 Organisational Change

Both organisations believed that changes in working practices were achieved as a result of this project. However these changes were close to the technology and its use rather than across the entire patient journey. The number of interviewees that answered the questions about the management and the coordination of change was low in both organisation, and this was more apparent in Greater London Trust. This could be due to the fact that Greater London Trust did not have a dedicated structure or a group responsible for overseeing and coordinating change initiatives across the organisation, unlike Central London Trust. However the interviewees at Central London Trust indicated that the existing structure was not very effective.

Both organisations indicated that the management of change was difficult and could have been done better. Furthermore there was evidence that suggested that there was a lack of knowledge and skills to manage change effectively. In Central London Trust the SRO believed that there was an effective structure and approach in place to manage and coordinate change. His views were at odds with most of the clinicians' views.

In general, the literature suggested that the main reason for failure was the lack of focus on the management of change, and failure was not related to the feasibility or the reliability of the technology (Gardner and Ash, 2003; Benjamin and Levinson, 1993; Manzoni and Angehrn, 1997). The success of IT-enabled change initiatives can be improved by paying more attention to managing the change than the technology. This was examined further in the literature and it was found that combining change management techniques with technology implementation, understanding the change dynamics at the people/technology interface, and understanding the relationships between technology, change and the organisation were keys to improving the success rate of IT-enabled change. (Gardner and Ash, 2003; Markus and Benjamin, 1997; Orlikowski and Hofman, 1997). Technology development and implementation must be introduced as a change management process and be integrated within the organisation's strategic and managerial framework (Bartoli and Hermel, 2004).

The findings from both organisations supported the findings from the literature, which indicated that positive outcomes of projects are achieved through changes in working practices. However if these changes were planned, executed and co-ordinated with other change initiatives, the project outcome could have been further improved, and the level of disruption during the implementation stage could have been minimised. Furthermore more benefits could have been realised if the changes in working practices extended beyond the use of the technology.

Both organisations were very positive about the projects outcomes. They have described these projects as successful and indicated that they would not wish to revert back to the old systems. The findings from both organisations were summarised in table 18.

**Table 18 Summary of the findings from the two projects in P1**

<b>Summary of the findings – Greater London Trust</b>	<b>Summary of the findings – Central London Trust</b>
<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <p>There was a good level of awareness of the BC and the ID, suggesting that these activities were well publicised. However there was a low level of involvement in the investment decision and the development of the business case. Only a few managers and the director of the radiology services were involved.</p> <p>The BC and the ID were superficial as they were driven by the NPfIT.</p>	<p><b>Business Case (BC) and Investment Decision (ID)</b></p> <p>There was a positive (majority) support to the level of awareness of the BC and the ID, although this was not as strong as in Greater London Trust. There were split views on the levels of involvement in the investment decision and the development of the business case.</p> <p>The BC and the ID were superficial as they were driven by the NPfIT.</p>
<p><b>Project Structure</b></p> <p>There was a low level of involvement in the project structure, which was expected, but a good level of awareness of it. There was a majority support believing that the project was led by clinicians. The findings from the interviews also suggested that the project had a wider remit than technology, which could have helped to get more clinicians engaged.</p>	<p><b>Project Structure</b></p> <p>Similarly at Central London Trust the level of involvement in the project structure was low. The level of awareness of the project structure was good but not as good as Greater London Trust. The majority of the interviewees believed that the project was jointly led by IT and clinicians. The joint leadership of the project ensured that the project was not dominated by IT, and as a result the project had a better appeal to clinicians.</p>
<p><b>The implementation Approach</b></p> <p>The interviewees were happy with the implementation approach and they preferred the staged and rapid implementation of the project.</p> <p>A system support arrangement was in place and the majority believed that the system was reliable. This was due to the fact that the deployed technology was mature and tested.</p>	<p><b>The implementation Approach</b></p> <p>Generally the interviewees were happy with the technology, the support arrangement, and the project implementation approach.</p> <p>Overall, people preferred the staged and rapid implementation of the project. However they criticised the lack of planning to manage the operational problems that resulted from the initial delay in implementing the project.</p>
<p><b>The role of clinicians</b></p> <p>All the interviewees indicated that the system was used widely by staff.</p> <p>There was limited initial resistance to the use of the system. However, the level of resistance was drastically reduced once the system was implemented.</p> <p>The project had a good level of clinical involvement and support.</p>	<p><b>The role of clinicians</b></p> <p>The interviewees believed that the system was used by all. The interviewees' views were split on the existence of initial resistance to the project. However the level of ongoing resistance was very low.</p> <p>Clinicians' engagement and involvement was strong.</p>
<p><b>Communication</b></p>	<p><b>Communication</b></p>

<p>Communication was good and staff were aware of the project's benefits, and the implementation timetable. A variety of communication methods were used in this project.</p> <p>Clinician-to-clinician communication was used in this project, and was described as an important tool to secure clinicians' engagement and support to the project. The NPfIT communication campaign to promote the first implementation at Greater London Trust also made a positive impact.</p>	<p>The communication for this project was effective. Variety of methods were used to communicate with staff, including clinician-to-clinician, newsletters, emails, etc.</p>
<p><b>Training</b></p> <p>Training was good, and interviewees felt the system was easy to use and therefore limited training was required. Short and flexible training delivery was used and was effective. Clinicians felt this was more effective than formal and long training sessions, as it was easy to remember the information and did not require major time commitment.</p>	<p><b>Training</b></p> <p>Overall the training on this system was not a major concern or issue, and the interviewees were content with the received training. However the issue of timing of the delivery of the training was raised as a concern.</p> <p>Users also preferred short and flexible training to the long and formal format.</p>
<p><b>Benefits Realisation</b></p> <p>All the interviewees were aware of the project benefits, and they all believed that these benefits were being realised, however the process of benefit realisation was not managed effectively. The benefit plan was produced at the business case stage, partly populated by NPfIT, and was not used much after that. There was no effective audit of benefit realisation, due to fear that budgets would be reduced and staff made redundant.</p> <p>In summary this organisation has realised and measured the financial benefits, but believed that they realised but did not formally measure the non-financial benefits. The only evidence available to support the realisation of non financial benefits was the daily experiences of clinicians and managers as they were described in the interviews.</p>	<p><b>Benefits Realisation</b></p> <p>All the interviewees were aware of the benefits of the project, and a strong majority believed that these benefits were being realised. However the realisation of benefits was not managed effectively.</p> <p>There was a formal benefit plan in place, but most of it was populated by NPfIT, and therefore there was little ownership of the plan by staff. There was no effective audit of benefit realisation. There was also strong evidence that the financial benefits had been measured and realised. The interviewees were able to describe how the non-financial benefits were realised but there was no evidence in terms of audit or recording to support this finding. Generally staff didn't see the value of having a formal approach to benefits management as they believed that the benefits were very obvious and they could be realised without any plans.</p>
<p><b>Change Management</b></p> <p>Very few interviewees answered the questions about the management and the coordination of change. There was acknowledgement that the management of change was difficult.</p>	<p><b>Change Management</b></p> <p>Overall the changes in working practices required for the effective use of the system have been achieved. However there was no evidence to suggest that the wider changes in the system, away from the use of the technology, were achieved. The way change was managed and coordinated was not very effective. The level</p>

<p>All the interviewees believed that changes in working practices were achieved, but in the main these changes were close to the technology rather than across the patient journey.</p>	<p>of disruption could have been minimised and the level of user satisfaction could have been improved, if the change had been managed effectively. This again pointed to the lack of clear processes to manage change effectively, and possibly the lack of skills in this area. Furthermore the view of the managers was clearly different from that of the clinicians. Clinicians felt this area was not managed effectively, but the managers disagreed.</p>
<p><b>Project Outcome</b></p> <p>There was overwhelming support indicating that the PACS project was successful and users preferred PACS to the old system.</p>	<p><b>Project Outcome</b></p> <p>The interviewees had strongly supported the new system, and clearly indicated that they would not like to revert to the old system. Furthermore they believed that the project was successful.</p>
<p><b>Stakeholders Relationships</b></p> <p>Very few interviewees were able to comment on the nature of the relationship between the organisation and the supplier. However there were clear indications that this relationship was complicated. This was due to the complexity of the NPfIT contractual arrangement with the suppliers, which made it difficult for the organisation to have direct access to the system supplier.</p> <p>There was a majority support suggesting that the clinician-manager relationship was good, despite the existence of some tension between the two sides about resources.</p>	<p><b>Stakeholders Relationships</b></p> <p>Similarly at Central London Trust very few interviews were able to comment on the nature of the relationship between the organisation and the supplier. This relationship was described as complicated and unhelpful, and it was felt that a direct relationship between the organisation and the system supplier would have been beneficial.</p> <p>There was tension between the managers and clinicians, but it was limited, and this project did not increase such tension. Interviewees generally were positive about the relationship between the managers and clinicians.</p>



## 2.8 Conclusions

The PACS projects showed that there are different activities/factors that take place at different stages of the project lifecycle. These stages can be defined as pre-project, project and post project. The factors that have been discussed under each theme have been categorised according to the project timeline and grouped under the three stages. This categorisation, as shown in Table 19, should help organisations to understand the level of activity, effort and possible resources required at different stages of the project. Therefore, this categorisation, if undertaken prior to the start of any project, should highlight the importance of the required organisational capacity and capability to implement successful projects.

It was clear that various activities need to take place before the start of the project and that such activities have a major impact on the management of the project. The factors at this stage are concerned with preparing the organisation for the implementation stage. Across the two organisations studied this stage was managed effectively.

The project factors relating to the implementation stage are concerned with implementation of the technology, the training, the management of change, etc. During this stage active management of these areas is required. This is usually a difficult stage of the project, where disruption to the normal working practices takes place and the organisation's performance could be negatively impacted as a result (Tushman, Neman, and Romanelli, 1986). The main areas of concern across the two organisations at this stage were the planning and the execution of change and the timeliness of training (particularly at Central London Trust).

Finally, the post-project factors are focused on the activities that take place following the completion of the implementation. The key factors in this stage are the realisation and the measurements of benefits, on-going use of the system and changes in working practices. Across the two organisations, this stage was not managed well, particularly the area of benefit realisation and measurement, and the wider changes in working practices. The researcher believes that effective management of the post-project factors can make the difference between a 'good' project and an 'excellent' project, a good project being one that realises sufficient benefits to justify the investment, and excellent being one that realises the full potential benefits.

Usually, project teams are disbanded following the completion of the implementation stage, and therefore the knowledge and the momentum required to manage the post project factors are no longer available. The successful management of the project factors will resolve existing problems within the department or the organisation. In order to fully exploit the deployed technology and realise further benefits the organisation needs to identify and implement further changes in ways of working across the patient journey and the care pathways. This also explains why even projects that have been judged as successful, such as the deployment of PACS, are not realising the full benefits of the technology. This was reflected in the findings of this research and confirmed by the National Audit Office Report (2008).

The temporal categorisation of key success factors into pre-project, project and post-project areas is significant, as this approach could enable organisations to understand the required level of capacity and capability to implement successful projects. The use of NVIVO was very helpful in reducing the data and demonstrating the cause and effect relationships between various areas. The outcomes of NVIVO shown in figures 12 and 13 have also highlighted the key factors that positively impacted, negatively impacted, or have had no impact on the outcomes of the projects.

**Table 19 Initial project factors model**

<b>Pre-Project Factors</b>	<b>Project Factors</b>	<b>Post-Project Factors</b>
Investment Decision Involvement & Awareness	Effectiveness of the Implementation Approach	Changes in Working Practices
BC Involvement & Awareness	Communication Sufficiency & Variety	Benefits Realisation
Initial Clinician Resistance	Training Sufficiency & Delivery Method	Benefits Realisation Audit
Clinician Engagement & Involvement	Project Structure Awareness & Involvement	Ongoing Clinician Resistance
Awareness of Benefits	Awareness of Benefits	Clinician Use of the System
Manager-Clinician Relationship	The Use of a Formal Benefits Plan	Users not Reverting to the Old System
Planning of change	Execution of Change	
	Customer-Supplier Relationship	
	The Use of an Experienced Project Manager	
	Project Leadership & the Use of a Experienced Project Manager	
	Co-ordination With Other Change Initiatives	

Overall, across the two organisations studied there was a high level of satisfaction about the outcome of the PACS projects and the deployed technology. The great majority of the interviewees believed the projects were successful, clinicians were using the system and the projects were realising the “intended benefits”.

Both PACS projects have been assessed as successful. These assessments were based on a number of areas. Firstly, senior managers and clinicians from the two organisations described this project as successful. Secondly, the outcome of the government assessment of these projects was that they were viewed as successful projects. This assessment was based on feedback from NCfH and the Strategic Health Authority. Finally, the findings from the interviews have confirmed the same outcome.

The positive outcomes of these projects could be due to the fact that the deployed technology, PACS, was integrated into the daily working activities of the clinicians. Therefore, clinicians were not able to undertake their work without the use of this technology. PACS technology was mature, tried and tested. This had increased the clinicians’ and the managers’ level of confidence in the deployed technology. Finally, there was a high level of awareness and belief in the intended benefits, which was due to the effective NPfIT and internal communication campaigns and the fact that many clinicians had positive experiences of using this technology elsewhere.

The interests of the managers and clinicians were aligned in this project, because managers believed that there would be efficiency savings, improved performance and outcomes, while clinicians believed that their daily jobs will be run more efficiently, patient experience would improve, and clinical risks would be reduced. Managers were able to justify the allocation of resources to implement these projects and clinicians were willing to use the system and overcome its limitations.

Despite the positive experience of the interviewees there were a number of areas that have not been managed well or could have been managed more effectively. There was a clear lack of processes around the management and realisation of benefits and the management of change. There was lack of appreciation for the need to audit or formally measure the realisation of benefits. There was also lack of skills and knowledge in managing change effectively. Extending the changes of working practices beyond the people-technology interface could also achieve further benefits that support the entire patient journey.

Nelson's (2005), and DeLone and McLean's (2003) IS success models have been used to explain the findings from the two PACS projects. By applying Nelson's model (2005) with its six aspects to the two PACS projects it was clear that that the three aspects of the process stage (cost, product, time) have been met. Cost was not an issue as both projects were financially subsidised by NPfIT. The product was mature, tested and with proven quality, and finally there were no delays to the project with exception of small delay at StMary's, so time was not of a major concern.

The three aspects of the outcome stage (use, learning, value) were met. The PACS systems were well used and the stakeholders' knowledge has increased as a result of the deployment of these systems. However it was clear that further learning is still possible as the technology becomes fully exploited and more benefits are realised. Finally the two organisations have achieved measurable efficiency improvements by realising many of the financial benefits of these projects, so value according to Nelson's model (2003) was achieved. Therefore according to this model the two PACS projects can be judged as successful. Although Nelson (2003) defines value as measurable efficiency improvements such as the realisation of the financial benefits, value in the NHS is defined differently. In the NHS value is defined in terms of financial improvements, quality of care and positive patients' experience. Therefore according to this definition of value the projects are judged as partially successful, as the wider benefits that impact the quality of care and the patients' experience have not been fully realised.

By applying DeLone and McLean (2003) model to the two PACS projects it was clear that the first stage of the model (quality information, quality product, quality service) was satisfied and met. The PACS system met the three quality criteria, as it was tried and tested system. The two PACS projects also fully satisfied stage two (use, intention to use, user satisfaction) of the model as the levels of use and user satisfaction were very high. However the third stage of the model was only partially met as some of the available benefits have yet to be realised. The findings from this research suggest that successful implementation of stage one and two of this model does not necessarily lead to the realisation of the full net benefits.

It was acknowledged previously that the main limitation of these models is that they do not address the implication of the business changes and their impact on benefits realisation.

Due to the high level of use, user satisfaction and the realisation of the financial benefits, the NHS, both organisations and the interviewees have judged these projects as successful, despite the fact that many other benefits have not been realised. Across these two organisations and the NHS these achievements were significant in comparison to many previous technology deployment projects that failed to deliver the benefits that originally justified the investments. Therefore, the two organisations and the NPfIT were satisfied with what they had achieved. However, this level of satisfaction may have prevented them from identifying and implementing further changes in ways of working and hence not realising the full set of benefits available.

Changes in ways of working were confined to the use of the technology which in turn has led to the realisation of benefits that are closely related to the immediate use of the technology rather than the entire patient journey. The management of the benefits was not fully effective across the two organisations which lacked skills and expertise in change and benefits managements. The identification and the implementation of changes in ways of working across the care pathways and the entire patients' journey, together with effective management of the benefit realisation process would ensure the achievement of the rest of the potential benefits that so far have not been gained from these projects. However in order to achieve this, investment in improving the staff skill level in managing change and benefits would be required.

There are two objectives of this research. The first was to identify the key factors that impact the outcomes of IT projects in the NHS. Using the findings from study of two relatively successful projects, the key factors that contributed to this success have been identified. These factors and the reasons behind them were clearly illustrated by the NVIVO outcomes and were discussed earlier in this chapter.

The second objective of this research was to identify the reasons of the recorded lack of benefits realisation of IT projects in the NHS. This objective was achieved by examining previous project success models and applying them to the NHS context, and by explaining the findings of this research in relation to the two success models.

The research question that guided this research is:

How can the realisation of benefits from IT enabled change be improved across the NHS?

The first question has been addressed and the supporting evidence includes the outcomes of the NVIVO analysis, the discussions in chapter 2. The factors that have most influence on the benefits realised in the two PACS projects are

1. The deployment of tried and tested technology, with a proven set of operational benefits

2. The deployment of technologies that are integral to the daily work of clinical staff, whose jobs were directly improved by the introduction of the new technology
3. The strong and stable senior leadership throughout the life of the projects
4. Good working relationships between the clinicians and the managers, with mutual understanding of the core benefits, working together as a team to implement the projects
5. The business cases (despite their limitations) contained sufficient details to identify the required resources to manage the projects successfully and received sufficient internal and external scrutiny before their approvals.

The realisation of benefits could be improved by addressing the areas (listed below) that have not been managed as effectively as other areas of the PACS projects:

1. Active involvement of key stakeholders in the identification of the benefits
2. High awareness amongst stakeholders of the full benefits (not just personal benefits) that impact the entire patient journey, patient experience and the care pathways.
3. Identifying and effectively managing the key processes, particularly the processes of managing change and benefits
4. Ensuring the availability of resources and skills, after the completion of the implementation, to effectively manage the realisation of benefits and achieve the project outcomes.
5. Auditing, measuring and reviewing the realisation of benefits and identifying new benefits
6. Operationalising the realisation of benefits to move beyond the project team and to include front line staff
7. Improving staff skill levels in managing change and benefits

However, due to the fact that this research has so far examined two relatively successful projects, deploying a specific type of technology, it was identified that further research of less successful projects deploying different types of technologies would strengthen the findings of the research.

### **2.8.1 Limitations leading to the design of project two**

There are number of limitations to this project that need to be taken into account when assessing the findings and designing project two. These limitations are listed below.

1. The deployed PACS technology was
  - a. part of the NPfIT solution
  - b. mandated by the government through the NHS Connecting for Health and financially subsidised
  - c. selected by the NPfIT
  - d. mature, tried and tested
  - e. integrated into the daily work of the clinicians
  - f. used within the organisation rather than across different organisations
2. The investment decisions and the business cases were relatively superficial as the technology was mandated and the cost was subsidised by the NPfIT
3. The potential benefits were identified by the NPfIT and used to populate organisations' benefits plans

The above characteristics will have impacted the outcomes of these case studies. For example the awareness campaign that was undertaken by the NPfIT had raised the level of awareness of staff of this technology and its intended benefits. However on the other hand the involvement of NPfIT in developing the benefits plan may have reduced the level of ownership by staff to the wider benefits.

In project one, two case studies of successful implementations were examined. The factors that have impacted the outcome in these case studies may or may not apply to the implementations of less successful projects. Therefore, other case studies of less successful implementations that address the above limitations need to be examined to improve the level of confidence and the generalisability of the findings.

The PACS technology is predominately used within the organisation and not across different organisations. This fact may impact the outcome of projects or the level of support and engagement. Therefore, it is desirable to examine a technology that is used across more than one organisation and has different stakeholder groups.

Finally, these types of technology deployments are not typical and limited to technologies that are deployed through the NPfIT. However, the NPfIT had signalled that organisations will be able to choose the required technologies and justify their choices through full business cases (Department of Health, 2008). Therefore, examining the deployment of typical technologies in the NHS is highly desirable.

## 2.8.2 Considerations for Project Two (P2)

In order to overcome the limitations of project one, and improve the generalisability of the findings, project two will include two case studies in two other NHS organisations. Strong possibilities for the empirical studies in project two include:

1. The deployment of a theatre system in Norh East Trust. Initial assessment of this deployment suggests that many users are dissatisfied with the system. Theatre systems are used widely within hospitals and by key departments such as surgery, anaesthetics and information.
2. The implementation of electronic discharge summaries in Norh East Trust. Initial assessment of this project suggests that some key departments are still using the old paper based system. This technology impacts internal stakeholders such as clinicians and external stakeholders such as the GPs.
3. The deployment of order communication system across Norh Trust and their GP community. Initial assessment of this project suggests that up to 30% of practices are still using the old paper based system.

All the above three technology deployments were not mandated by the NPfIT or the government, their costs have not been subsidised by the NPfIT or the government, and were selected by the organisations.

The examination of two of the above deployments could highlight the reasons for the poor use, poor user satisfaction and their impact on benefits realisation. Furthermore, they could highlight issues relating to the process of selecting the technology, making the initial investment decision, the development of the business cases, and the management of key external stakeholders such as GPs. As a result, the key factors that contribute to success and the reasons for the lack of benefits realisation that have been identified in project one will be reviewed and may have to be amended.





## Chapter 3 - Project Two

### 3.1 Executive Summary

This document is project two of the DBA structure. The document is structured into executive summary, introduction, literature review, methodology, data analysis, discussion and conclusion.

The initial research problem was identified and the research context was defined. The initial research problem was concerned with the lack of success of IT enabled change initiatives and projects across the NHS. The scope was defined as the National Health Service and was discussed in detail in project one. The scoping study had identified the key body of the literature that was examined in project one. It included:

1. Organisational change
2. Information technology and organisations
3. Benefit realisation
4. Stakeholder relationship
5. Success and failure of IT projects

In project two, a further literature review was undertaken in the areas of leadership and the management of stakeholders. These areas were included in data collection and analysis strategy. A case study approach was used to undertake the empirical work. Two case studies were undertaken in several NHS organisations.

The findings from the two case studies in project one were very similar, indicating that there are a number of areas that could impact project outcome and the realisation of benefits. The key finding from the case studies is that the use of a mature technology with proven benefits could improve the engagement and the commitment of different stakeholder groups. Furthermore the use of a technology that is integrated into the daily work of clinicians has a higher level of ownership and success.

In project two, the two case studies examined the implementation of a theatre system (TS) and order communication system (OCS). Both of these implementations were not as successful as those examined in project one and the key factors that limited the success and the benefit realisation of these projects are:

1. Poor management of the pre-project stage, and particularly poor business cases and management of stakeholders
2. Ineffective leadership
3. Lack of trust between key stakeholders within the NHS: clinicians/managers; PCTs/Hospitals; PCTs/GPs
4. Poor management of changes, particularly redesigning clinical processes, that impact patients' journeys in the NHS
5. Lack of focus and attention on benefits management

### 3.2 Introduction to Project Two

This document is project two as identified within the overall DBA outline structure illustrated in figure 14. Project one examined two successful IT projects, namely PACS deployments in two NHS hospitals. The factors that have most influence on the benefits realised in the two PACS projects were identified, together with a list of the areas that need to be addressed in order to improve the realisation of benefits. There were several limitations associated with the context of project one, and therefore project two is designed to address these limitations in order to improve the generalisability of the findings. The limitations of project one included:

1. The deployed PACS technology was:
  - a. part of the NPfIT solution;
  - b. mandated by the government through the NHS Connecting for Health and financially subsidised;
  - c. selected by the NPfIT;
  - d. mature, tried and tested;
  - e. integrated into the daily work of the clinicians;
  - f. used within the organisation rather than across different organisations.
2. The investment decisions and the business cases were relatively superficial, as the technology was mandated and the cost was subsidised by the NPfIT.
3. The potential benefits were identified by NPfIT and used to populate organisations' benefits plans.

Two case studies were undertaken in project two; they represented projects that had underachieved and were judged to be less successful than those in project one. The two case studies were:

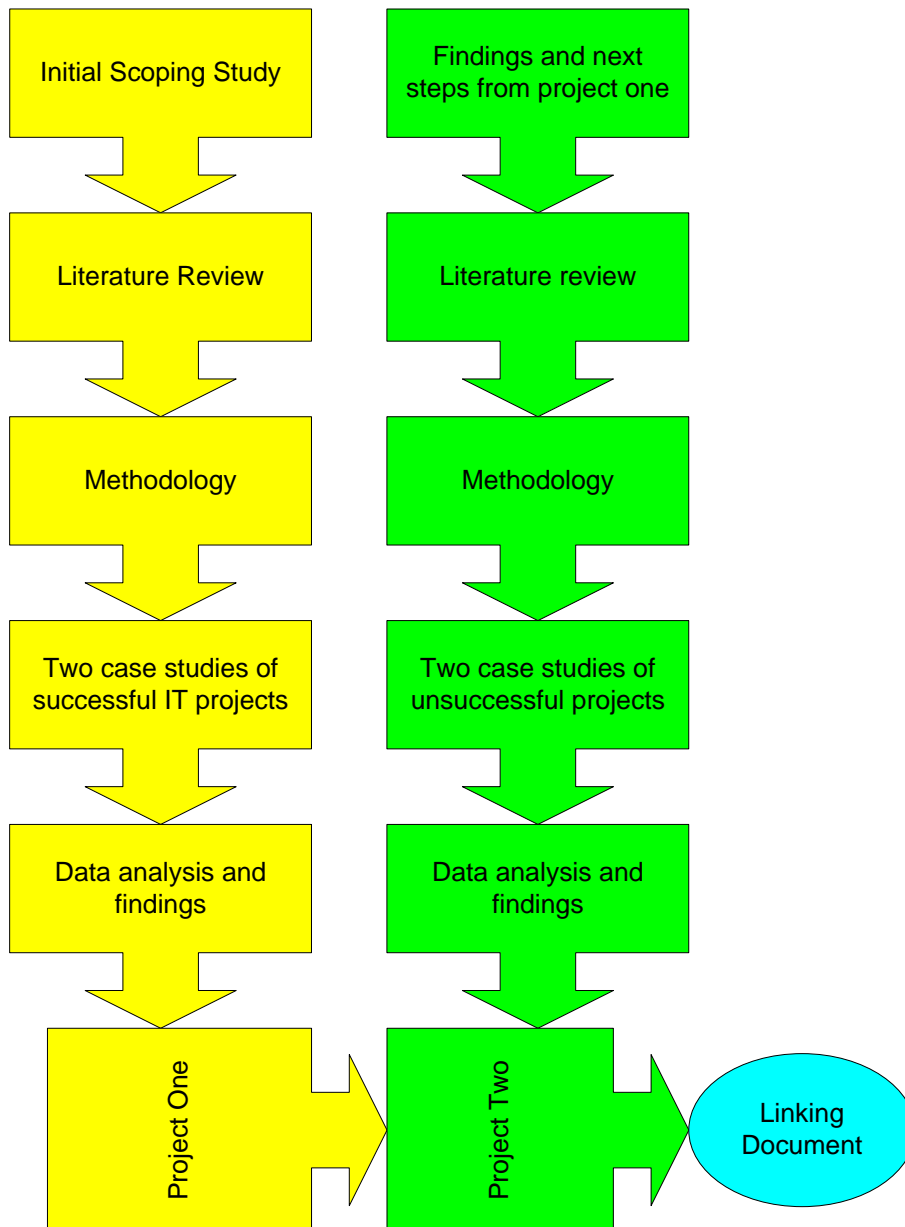
1. The implementation of an electronic theatre system (TS) in organisation three. Initial assessment of this project suggests that the system was not widely used and key clinicians believe the system does not meet the key requirements of the department. Many surgeons are using alternative systems to support their clinical work. The initial driver for implementing the system was to satisfy a government initiative to improve efficiency and throughput within theatres.
2. The deployment of the order communication system (OCS) in organisation four and their GP community. Initial assessment of this project suggests that up to 30% of practices have not implemented the system. Furthermore, most practices that have implemented the system continued to use the old paper-based system in parallel with the electronic system.

Both of the above projects overran considerably and did not realise their full potential benefits.

The research methodology used was case study. Face-to-face, semi-structured interviews were used to interview twenty-three clinicians and managers in the two

hospitals and across several GP practices. The problems identified in relation to the lack of success and the lack of benefits realisation, together with the initial research question, provided the focus required for the literature review, which is discussed in the next chapter. A systematic approach to collating and analysing the data was taken, using several data sources and a computer aided tool NVIVO.

**Figure 14 DBA outline structure**



## 3.3 Literature Review

### 3.3.1 Introduction

Following the conclusion of project one and the characteristics of the two case studies that were selected for project two, further areas of literature were identified that needed to be reviewed to support project two. The areas that were identified were a supplementary section on stakeholder management and leadership.

The reasons for undertaking the additional literature review were that the initial literature review included only a limited review of the Leadership and Stakeholder literature since the main NHS specific issues appeared to be clinical engagement and senior management support for the project. Ideally the author should have looked more broadly into the literature but in project one stakeholder management and leadership did not emerge as important issues, due to the nature of the projects, including:

- a limited number of stakeholders, generally in only one part of the trusts
- strong clinician engagement, the obvious benefits and appointment of an SRO as mandated by the NPfIT funding for the project
- the fact that the projects went well, only limited changes to practices were involved and the projects were generally agreed to be successful
- the selection of the technology and the business justification for the investment were undertaken by NPfIT

However following the initial examination of the selected case studies, and discussions with the relevant organisations prior to the commencement of the interviews, it was realised that these factors would be different in the context of other NHS IT projects and therefore a more detailed, in-depth understanding of stakeholder management and leadership literatures would be important in understanding and interpreting the case studies in project two.

The data collected on these issues in project one will be re-examined in relation to the additional literature and the new questions, in the linking document. This will enable the author to understand and explain the underlying differences across the cases in the two projects and their causes, in order to identify specific stakeholder and leadership aspects that appeared to influence the relative levels of success at the different stages of the projects. Furthermore, the extent to which the learning from the more successful projects could be applied to the other two will be identified.

In project one, the two case studies of PACS implementations were concerned with the implementation of systems that were selected, mandated and to a large extent managed centrally through the CfH. However in project two the two case studies examined systems that were selected and managed by the organisations with no direct input from CfH or other central bodies. Both of the systems in project one were implemented and used within the organisations' boundaries, (intra-organisational systems). However in project two the implementation and the use of the OCS took place across multiple organisations, (inter-organisational systems). The above

differences between project one and project two have informed the selection of the additional literature that was reviewed in project two.

The management of stakeholders' competing interests, stakeholders' power, behaviours and influence on project outcome in inter-organisational projects needed to be explored. The outcome of project one indicated that having senior and stable leadership could positively impact project outcome. Coupled with the fact that the case studies in project two were totally managed and led locally, away from central control, this meant that the area of project leadership needed to be fully explored, with a focus on the following areas: leadership styles, categories, credibility and leadership in IS projects.

This additional literature review helped to refine and tailor the research strategy, and assisted the author in developing appropriate interview questions that enriched the analysis and the findings.

### **3.3.2 Stakeholder Management**

Stakeholder management has emerged as a key area that could impact project success, in that project outcomes could be severely impacted if stakeholders' interests and their conflicting agendas were not managed effectively. (Bourne & Walker, 2005) Lyytinen and Hirschheim (1987) defined failure as, "the inability of an IS to meet a specific stakeholder group's expectations".

It is widely acknowledged that Freeman (1984) made an important contribution with his strategic management: a stakeholder approach which was, and still is, significant for understanding and managing stakeholders (Mitchell, Agle and Wood, 1997; Frooman, 1999, Achterkamp and Vos, 2008). Stakeholders are defined as "any individual or group who can affect or is affected by the actions, decisions, policies, practices, or goals of the organisation" (Freeman, 1984). This definition was originally developed by Freeman and adopted by many other scholars, for example Greenley and Foxall, (1998); Scott and Lane, (2000); and Achterkamp, (2008), and will be used by the author.

In order to ensure that stakeholders support the project, the project manager, the project team or the senior management must clearly identify the project stakeholders (Carroll, 1989; Clarkson, 1995; Mitchell, 1997) determine their interests (Frederick, Post, and Davis, 1992; Wood, 1994) power (Hales, 2001; Mitchell, Agle and Wood, 1997), influence (Vogel, 1978; Davis and Thompson, 1994; Corlett, 1989; Ship 1997; Frooman, 1999; Aaltonen, Jaakko and Tuomas. 2008) and attitude (Boonstra, Boddy and Bell, 2008) towards the project.

Stakeholders have different interests and priorities. Project success or the key issues that a project should focus on will be different for different stakeholder groups. Therefore, in order to satisfy the stakeholders' interests, their priorities or measures of success should be understood (Nelson, 2005). Recognising that stakeholders have different interests and priorities would aid the project team to focus their effort and

resources on the appropriate areas and ensure that the activities within their plans are adjusted to address these priorities. It would also help the project team to maximise the stakeholder satisfaction, as they would focus their effort in meeting and satisfying the relevant stakeholders' interests.

Projects that are implemented across multiple organisations often have many stakeholders with sometimes diverging interests, priorities and measures of success. This makes the management of stakeholders and the relationships between stakeholders in such projects more complex. "The challenge facing those implementing an inter-organisational system is that it is likely to have a radical effect on the external relations between each of the participating organisations and, at the same time, require internal changes in each" (Boonstra, Boddy and Bell, 2008). Defining the stakeholders for such projects, understanding and assessing stakeholders' interests can be a very daunting task for managers and for those who are leading or managing projects. Mitchell, Agle and Wood's (1997) answer to prioritising the stakeholders' competing interests is to define stakeholder salience; in other words, to identify whom and what managers should pay attention to. They argue that "the degree to which managers give priority to competing stakeholder claims goes beyond the question of stakeholder identification, because the dynamics inherent in each relationship involve complex considerations that are not readily explained by the stakeholder framework as it currently stands."

Due to the complexity of managing stakeholders' interests, their salience must be identified to help managers target their effort and resources to the appropriate stakeholders. Salience is based on the possession of one or more of three attributes: power - "Stakeholder's power to influence the firm"; legitimacy - "the legitimacy of the stakeholder's relationship with the firm"; and urgency - "the urgency of the stakeholder's claim on the firm" (Mitchell, Agle and Wood, 1997). They also argue that salience of a stakeholder is low if it possesses only one of these attributes, moderate if it possesses two, and high if it possesses all three attributes. Another important point that they argue is that salience of stakeholders is dynamic. Stakeholders' possession of the attributes and their salience level changes from issue to issue and from time to time.

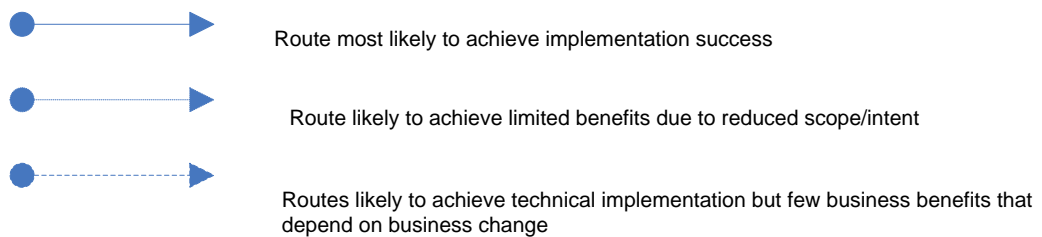
This framework to define the salience of stakeholders is useful and brings to the fore the issue of understanding stakeholders' influence and impact on projects; however, it does not attempt to analyse the type or the source of power that stakeholders possess, and the way this could manifest itself in stakeholders' attitudes or behaviours.

Ward, Hemingway and Daniel. (2005) developed a framework that combines Kling's (1980) and Kumar's (1998) IS rationalities model with the dispute resolution approaches developed by Ury, Brett and Goldberg (1993). This combined framework (See figure 15), helps to bring together the various stakeholder behaviours and the approaches required by the management to manage these behaviours. They indicated that the management approach is controlled by the project management team and the senior management, but the stakeholders' attitudes are shaped by various factors, such as the organisational context and the relationships between stakeholders. Therefore the management team has to select the appropriate management approach to deal with stakeholders' behaviours. Furthermore the management team should be able to change their approach at different stages of the project.

This combined framework also provides the practitioner with a tool that can aid understanding of the key organisational issues that could impact the implementation of enterprise systems. In particular, it could help practitioners managing the wider stakeholder interests by getting them to understand the implications of the management approach that they are using, and to consider that a particular management approach may not be suitable in all circumstances and at different stages of the project. The effectiveness and the generalisability of Ward, Hemingway and Daniel's (2005) model could be enhanced by linking it to the role of the management team in managing the enabling of change in each organisation/stakeholder and by applying it in a different context, such as the NHS.

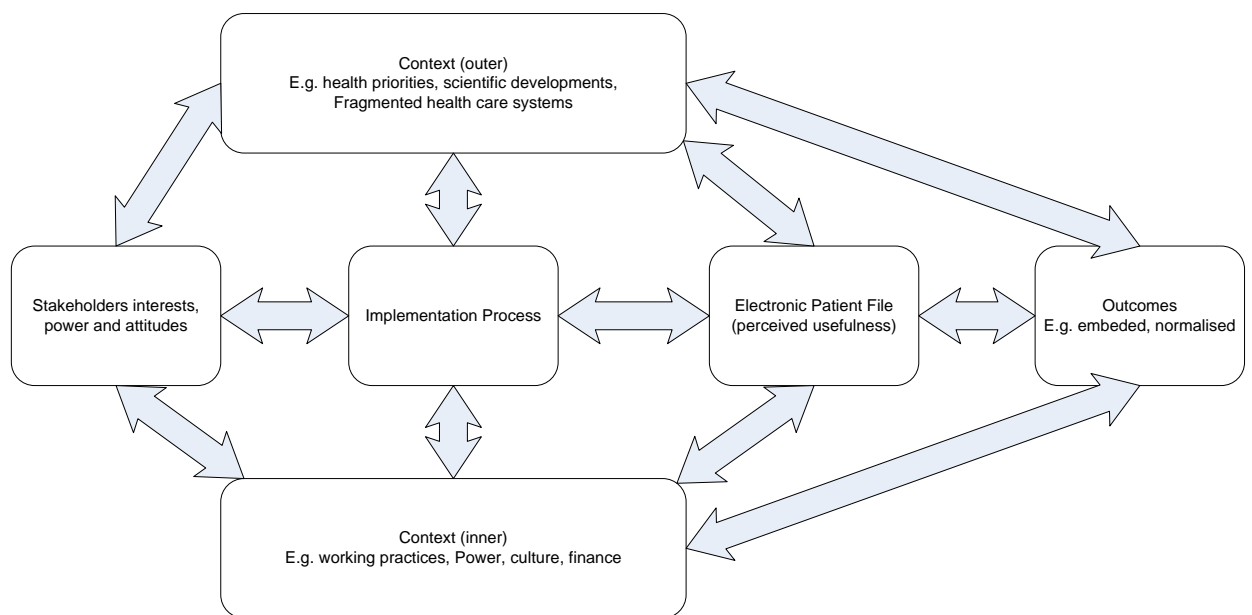
**Figure 15 Ward, Hemingway and Daniel's Combined Framework (2005)**

		ES project team's stakeholder management approach		
		Top-down (power) Those responsible for ES implementation make decision with or without consultation of stakeholders	Coalitions (Interest) ES project team facilitate stakeholders in identifying courses of action that satisfy all of their requirements	Negotiation (Rights) ES project team uses the project plan and other documents to define how change will be implemented and how benefits will be delivered
Information systems rationalities & behaviours	Rational (System rationalism) Stakeholders focus on maximising the organisation's effectiveness and efficiency			
	Trust (Trust based rationalism) Stakeholders trust each other to work in a way that is mutually beneficial			
	Self-interest (Segmented institutionalism) Stakeholders focus on satisfying their private interests by negotiation with other stakeholders			



More recently Boonstra, Boddy and Bell, (2008) have developed a stakeholder focused framework that will be used to explain the findings from project two, (See Figure 16), and identify potential strategies for achieving the desired outcomes. Their framework starts with understanding and determining stakeholders' interests, power and attitudes. They used Pettigrew's (1987) approach of analysing stakeholder inner and outer contexts in order to understand the sources of power, attitudes and behaviours that stakeholders exhibit or possess. The use of this framework could help to determine the stakeholders' perceived values/benefits about the project, which would influence their attitudes and behaviours towards the project. Therefore this model would help to determine the benefits that are important to individual stakeholders by understanding their inner and outer contexts, and this could lead to their commitment to achieving the project's desired outcomes. The model alludes to the importance of the implementation process, but it doesn't address the management of change required within each organisation.

**Figure 16 Boonstra, Boddy and Bell's (2008) stakeholder model of IOS implementation**



Boonstra, Boddy and Bell, (2008) used a Power-Interest Matrix (Eden and Ackermann, 1998) to determine the power and interest of the various stakeholders at a particular time (see figure 17). It was then used to determine the role that should be played by individual stakeholders (according to their power and interest in the project) to maximise the project outcome.

This is a very useful matrix which, when combined with Hales' (2001) types of power and strategies to change stakeholders' power and influence, could provide an effective approach to managing stakeholders and their divergent interests. Hales (2001) identifies four sources of power:



1. Coercive – the authority to give instructions
2. Reward – the authority to reward desirable behaviour
3. Administrative – the authority to create policies or rules
4. Technical – the authority to access expertise and information

These sources of power can be very helpful to understanding the role that different stakeholders can play to improve the project outcome, and consequently help the project management team to understand how the interests of the key stakeholders that possess this power can be enhanced or satisfied. For example in the OCS project the Primary Care Trust has the power to give instructions to GPs to use the system. This would have a major impact on the project outcome by getting GPs to stop using the paper system and start using an electronic system only. However in order to do that the project management team would have to ensure that there were significant benefits to the PCT, in order to make them interested in issuing instructions/policy to the GPs. (see section 5 and 7 for full explanation)

**Figure 17 Power-Interest Matrix, (Source Eden and Ackermann, 1998)**

		Interest in the project	
		Low	High
Power to affect implementation	High		
	Low		

An example of how the above matrix can be used is that in the OCS project the hospital has a high interest in the project as they have many benefits that will result from the successful implementation of the system, but they have low power to influence the GPs as they have no direct formal authority over them. Therefore one of the factors that will allow the hospital to implement the system successfully is to adopt a strategy that will increase their power or influence over the GPs. This will be illustrated in more detail in the discussion section, where the matrix is used to analyse stakeholders' power/interests and the strategies they should adopt to improve the project outcome.

The management of stakeholders in the NHS is complex due to their diversity of interests. “The NHS is characterised by three defining features: range and diversity of stakeholders; complex ownership and resourcing arrangements; and professional autonomy of many of its staff.” (Pollitt, 1993; Dawson, 1999). Failure to meet the expectations of the medical professions, who are usually a salient stakeholder group, can limit the use of a health information system, even though other professionals are willing to participate (Boonstra, Boddy and Bell, 2008; Pouloudi, 1999).

The implementation of inter-organisational projects in the health sector, such as that of the order communication system, makes stakeholder management and its impact more challenging. “Implementing an inter-organisational system is likely to be particularly challenging in healthcare, as a feature of the sector is that responsibility for delivering healthcare to patients is typically shared between many autonomous organisations.” (Boonstra, Boddy and Bell, 2008). They found that the use of the power interest matrix of the stakeholders of an inter-organisational system project in the health sector in the Netherlands helped them to explain why an apparently beneficial system was not implemented successfully. They concluded that the project management/sponsors must attend to stakeholders and their interests at the outset.

The literature that has been reviewed points out that the management of stakeholders is an important factor to ensuring success. Both Ward, Hemingway and Daniel, (2005) and Boonstra, Boddy and Bell, (2008) will be used to explain the findings from project two. The latter research may prove very relevant to this work as the context is a European healthcare sector that has very similar characteristics to the NHS.

### **3.3.3 Project Leadership**

Projects often fail to achieve their intended benefits and outcomes due to lack of project leadership, and good leadership at the outset is vital for project quality and stakeholder satisfaction (Smith, 1999). The terms project manager and project leader have been used interchangeably, even though in theory the role of the project manager is focused on running the day-to-day activities of the project, while the project leader or sponsor is someone with a broader external outlook on the project, who ensures that stakeholders’ interests are satisfied and the wider business needs are met. The reality is that project leadership is normally shared between the project manager and the project sponsors or the senior responsible owner (SRO).

The literature reviewed in this section examines change oriented leadership, styles of leadership, leadership credibility and IS leadership.

#### **3.3.3.1 Change oriented leadership**

Leadership should be about coping with change (Kotter, 1998) and change oriented behaviours strongly correlate with staff rating of a manager’s competence

(Ekval and Arvonen, 1991). However research indicates that one of the key reasons for project failure or lack of success is the project and/or organisational focus on managing the technology and the systems with little focus on change management (Gardner and Ash, 2003; Benjamin and Levinson, 1993).

Research conducted between the 1950s and the late 1980s focused mainly on two behaviour categories: relation oriented behaviours and task oriented behaviours. The focus of task oriented behaviours is on efficient use of resources, people, and reliability of products and services. The focus of the relations behaviours is on members' commitment to the organisation/unit, trust and understanding amongst members. Some examples of such research include: Fleishman, 1953; Fisher and Edwards, 1988. During this period, change oriented leadership was largely ignored or was not recognised, even though the importance of leading change was suggested in organisation theory (Miller & Friesen, 1982; Tushman and Romanelli, 1985). Theories on the style of leadership (Bass, 1985; Conger & Kanungo, 1998; House 1977; Shamir, House and Arthur, 1993) have also referred to change oriented behaviour, but did not recognise it as a distinct type of behaviour (Yukl, Gordon and Taber, 2002). The area of change leadership truly came to the fore following two major studies, by Ekvall and Arvonen (1991) and Yukl (1998). The focus of change oriented leadership is about leading the change. Change oriented leadership would enable the change to take place and hence enable the benefits to be realised. The change oriented behaviours suggest the need for external focus, the use of innovation and service improvements.

One of the key findings from the above literature is the recognition that change oriented behaviour and the effective management of change are important factors for benefits realisation and, ultimately, success. This message was supported by the findings from project one and will be further examined in project two.

### **3.3.3.2 Styles of leadership**

Two key styles of leadership have been identified by researchers; they are Transformational and Transactional Leaders. Several assessment instruments have been developed to assess the behaviours of leaders. Examples of such instruments include, Bass' multifactor leadership questionnaire (MLQ); Yukl's managers practices survey (MPS); Quinn's competing values framework (CVF) (Strang, 2005).

The transactional leader is characterised as risk averse, process driven and succeeding in a stable and predictable environment (Bass, 1985). The transformational leader is characterised as risk taker, prefers effectiveness to efficiency, is unlikely to support the status quo and is generally proactive (Avolio, Bass and Jung, 1999). Although these characteristics are helpful in understanding the behaviours of such leaders, they lack the focus on creating and enabling change, which is a precursor to benefit realisation and ultimate success. Smith (1999) provided the change focus in his description of transformational leadership as a process of influence to enable change in processes, attitudes and systems to take place. Finally Yukl (1998) developed a comprehensive definition of transformational leadership that addressed the operational necessity of embedding the supported transformational strategies into the working practices of the organisation. This is the one that will be adopted in this research.

A transformational leader must “formulate a vision, develop commitment to it among internal and external stakeholders, implement strategies to accomplish the vision, and embed the new values and assumptions in the culture of the organisation.” (Yukl, 1998). Core to that definition is the ability of the transformational leader to lead and enable change. “Transformational leadership is the process of mobilising power to change social systems and reform institutions” Strang (2005). “Transformational leadership behaviour that elicits second order changes in employee efforts is more highly associated with effectiveness than traditional first order changes resulting from transactional behaviour.” (Lowe and Kroeck, 1996)

Lowe and Kroeck (1996) defined the different styles of leadership and also defined how each leadership style suits a particular organisational environment. “Managers in mechanistic organisations are likely to engage in more transactional behaviours than their counterparts in private organisations.” (Lowe and Kroeck, 1996). However the reality is that organisational settings change, even in traditionally stable environments. Consider for example the NHS, which can be perceived as a stable industry. However, the introduction of one government policy could introduce major impacting changes. Therefore the research does not address how leadership styles should be dynamic to suit the circumstances and should explain how leaders can achieve the dynamicity in their leadership, which should enable leaders to effectively manage the stakeholders and maximise benefits for the organisation or the project that they are leading. Although some of these points were addressed with limited scope, for example Ward, Hemingway and Daniel (2005) work on stakeholder management and further work on leadership styles beyond the management of stakeholders with reference to a particular project or specific context is required.

Managers in mechanistic and process driven organisations, such as the public sector, are likely to use or exhibit transactional behaviours, while those in private organisations are likely to use or exhibit transformational behaviours (Low, Kroeck, and Sivasubramaniam, 1996). Although this is still true to some extent, in recent years increasing numbers of public sector organisations are becoming more market focussed, paying attention to customer satisfaction, market share and business viability. This was demonstrated in the NHS through the creation of the Foundation Trusts, whereby successful hospitals were given more freedom and less central control, in order to develop new business opportunities. For example, some NHS hospitals are now running nursing homes, providing community dentistry, consultancy services, etc., which have never been part of the hospital’s business in the past. This suggests that leaders in the public sector are increasingly exercising transformational behaviours, and that such styles of leadership are not confined to the private sector. Transformational leadership has been recognised as a better management style that can lead a group of mixed cultures, across all industries and geographical areas (Strang, 2005).

The key conclusion from this literature is that the leadership style of the project leader could impact project outcome. Therefore, exploring how the leader has run a project and, where possible, identifying their style of leadership, would be valuable in determining the effect of leadership styles on project outcome.

### **3.3.3.3 Credibility of leadership**

Credibility has been recognised as an important attribute of a good leader and can positively impact employees' performance and the level of success (Gabris and Ihrke, 1996; Gabris, Golembiewski and Ihrke, 2001). "Employee perceptions of leader credibility associate significantly with important organisational outcomes and positive employee behaviours" (Gabris and Ihrke, 2007). Kouzes and Posner (1993) have linked credibility to four main characteristics: honest, forward looking, competent and inspirational.

Gabris and Ihrke, (2007) made an important connection between leaders' credibility and their position within the management hierarchy. They confirmed that the position of a leader in the organisational hierarchy is still an important factor in influencing project outcomes. For example the role of the CEO and his/her active participation in the management of information technology has been highlighted as critical to project success (Jarvenpaa and Ives, 1991). However, and more significantly, middle and junior managers have a very important role to play in achieving the desired outcomes and in changing employees' attitudes. "Followers perceive much higher credibility in immediate supervisors than in distant leaders" (Gabris and Ihrke, 2007).

### **3.3.3.4 Leadership in IS projects**

Traditionally the leaders of information technology have been selected for their considerable technical expertise, and project success was measured by the technical success with little attention to the business needs or customers (Kerzner, 2006). The dangers of having a leader who is technology or system focussed have already been explored, and the links to project failure were discussed in project one.

Recently there has been a focus on the wider business skills of project leaders, (Kerzner, 2006; Kloppenborg and Opfer, 2002), and a recognition that leadership characteristics are important in managing IS projects, (Weinberg, 1986). Couger (1996) found that most IT professionals are "left brain" adapters, who prefer to work with current paradigms and are most comfortable with structure, efficiency, and discipline. "When IT professionals become project managers, they may lack the interpersonal skills needed to manage and motivate others" (Sumner, Bock and Giamartino, 2006). However, in recent years increasing numbers of IT leaders have broadened their skill-base by acquiring key business skills and broader views of the business. Increasing numbers of IT leaders are now occupying executive roles in organisations and gaining valuable skills and knowledge of the key challenges and opportunities facing the business as a whole.

In the project management field, and particularly in the public sector, the project leader is usually termed as the project sponsor or SRO. This is in line with the PRINCE2 (Project in Controlled Environment) methodology adopted by public sector organisations in the UK. In the public sector the project sponsor is described as "the person responsible for representing the public client and acting as the day-to-day manager of the client's interest within the project" (Kloppenborg, 2009). Leadership in

the public sector is particularly demanding due to the fact that stakeholders are diverse and leaders have not only to satisfy the various stakeholder groups but also to comply with complex and sometimes conflicting government policies (Kloppenborg, 2009).

Leadership of IS projects has been recognised as an important factor that contributes to project success, and project leaders must select the appropriate strategies to guide their projects and motivate their team members. However project leadership requires special attention and skills due to the nature of a project: a project usually has a start and a finish point, it has a temporary management arrangement that is formed for the purpose of the project and disbanded following its completion, (Lundin and Soderholm, 1995). In a project, individual team members bring specific expertise to the team and to the project that can be used to determine the most effective and efficient ways to manage the project and satisfy its stakeholders, (Faraj and Sambamurthy, 2006). Therefore co-ordinating and leading the work that is provided by individual project team members who are likely to be individual leaders or experts in their fields, is a particular skill required of a project leader.

In summary, leadership, leadership style and leadership credibility have been recognised as important areas that impact project outcome. Furthermore, IT professionals who are leading projects must possess wider business skills and not rely solely on their technical expertise.

### **3.3.4 Summary**

Following the conclusion of project one and the selection of the two case studies for project two, a further literature review was undertaken in the areas of leadership and stakeholder management. These areas were used to drive the research design, the data collection and data analysis strategy. The factors that could influence the project's outcome have been identified from the reviewed literature, as per project one. The structure of the interview questions was modified and two new themes were created, Leadership and Stakeholder Management. A number of questions have been developed under each of the new two themes. The questions were clearly linked to the reviewed literature. The new questions are listed below:

#### **Stakeholder Management Questions**

- Q1. Who are the stakeholders of the projects?
- Q2. What benefits does each stakeholder want from this project?
- Q3. What attitudes did the stakeholders exhibit in relation to this project?
- Q4. How have stakeholders' power and influence impacted this project?

- Q5. How were the relationships between the stakeholders impacted by this project?
- Q6. What has been done to manage the different interests of the stakeholders?
- Q7. What behaviours did the stakeholders exhibit in relation to this project?

### **Leadership Questions**

- Q1. Was the project led by IT or clinicians? (This question was used in project one)
- Q2. What were the position and the credibility of the project leader/sponsor in the organisation?
- Q3. How did the project leader/sponsor run the project?
- Q4. Were there any changes in the project leadership during the life of the project?
- Q5. What was the role of middle and junior managers in implementing the project?
- Q6. What are the project leader's attributes?
- Q7. How did the project leader manage conflict between stakeholders?

## **3.4 Methodology**

### **3.4.1 Introduction**

The empirical study that has been undertaken in project two is the study of two less successful implementations of information technology projects in two NHS organisations: the deployment of a theatre system in one NHS hospital and the implementation of order communication system between another NHS hospital and GP practices.

Due to the similarities in approach and objectives, the same strategy and research philosophy was used for project two. Being mindful at the outset of the quality criteria of the data collection phase and the data analysis phase was also very important to ensure rigour and thoroughness was achieved in this research.

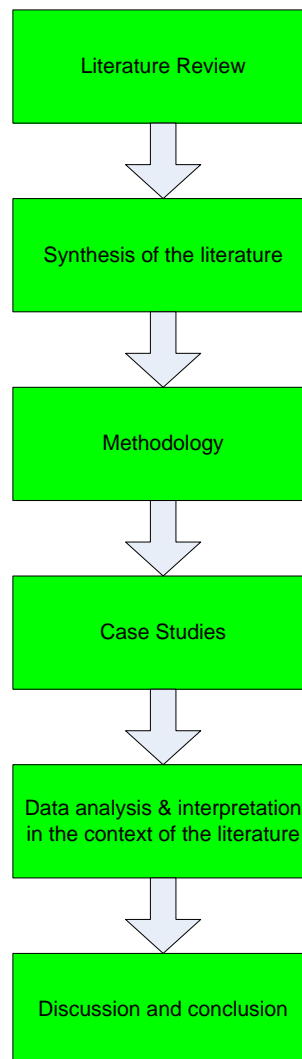
The examination of two less successful deployments of IT enabled change across several NHS organisations has enabled the identification of various factors that contributed to the lack of success and the lack of benefits realisation.

In project two, case study was used as the research method and tools and techniques were used to analyse and interpret the data including the use of NVIVO. In these case studies the research examined the implementation of a theatre system and OCS that have already taken place (retrospective), and is trying to discover and understand the issues relating to benefits realisation. This could lead to a better understanding of the real reasons behind the lack of benefit realisation, and helps to explain how the key problems impacting the benefit realisation, and hence the lack of success, could be resolved.

The research interest is in understanding how the intended benefits of IT enabled change investment can be realised, and success be achieved. These questions stem from a wide recognition in both academic research and practitioners' experience that such benefits are not routinely measured or recognised, particularly within the NHS, and success of IT enabled change implementation is lacking. Therefore the author's strategy was to examine such evidence by undertaking two further case studies across several organisations. The author aims to validate or otherwise these findings, identify the key factor or factors that influence the realisation of benefits, and use all the available evidence to construct an understanding of the reasons that prevent or obstruct the benefits from being realised. The overall research strategy is the same as that adopted in project one. The broader steps of project 2 are illustrated in Figure 18.



**Figure 18 The broader steps of P2**



### **3.4.2 Data Sources and Types**

Multiple sources and types of data were used in order to increase the richness of the data collected and reduce the impact of any biases that the data might have. In addition to the data from the interviews, other sources of data were used, including documents such as project plans, business cases, statements of needs, the suppliers' responses to the requirements and a statistics report relating to the use of the OCS.

The interviews provided a rich source of data, and enabled the researcher to examine and record the meanings the participants give to events and experiences. The interviews also allowed the researcher to ask further unplanned questions as they emerged through the interview process. The interviews' themes, questions and linkage to the literature are shown in table 20.



**Table 20 The interviews themes, questions and linkage to the literature.**

<b>Area</b>	<b>Questions</b>	<b>Literature</b>
The investment decision and the business case	<p>Were you involved in and/or aware of the initial investment decision?</p> <p>Who was responsible for developing the business case? Were you involved in or aware of this process?</p> <p>What was the process for approving the business case?</p>	<p>Cabinet Office 2000 – Business cases only deal with the technology part.</p> <p>McAfee, 2006 – An executive making the investment decision without proper assessment.</p>
Project structure	<p>Were you aware of and/or involved in the project structure?</p> <p>Who was involved in the project structure; what were their roles in the organisation? Who is the overall project sponsor?</p> <p>Were there any project members from outside the organisation?</p>	<p>Markus, Axline and Petrie, 2000 – Project stage and project team formation.</p> <p>Remenyi, 1999 – Projects are managed by small groups that follow their own interests. Project teams are dominated by IT staff.</p> <p>Ward, Hemingway, and Daniel, 2005; Byrson, 1998) – The role of the stakeholders and their interests.</p>
The implementation approach	<p>How was the project implemented?</p> <p>How effective was the implementation? How were problems managed? Was the system reliable?</p>	<p>Peppard and Ward, 2005 – Problem solving or innovation approach</p> <p>McAfee, 2006 – Categories of IT (Functional, Network, Enterprise) and the appropriate implementation approach</p>
The role of the clinicians	<p>What was the role of clinicians in this project?</p> <p>Do clinicians like and use the system?</p> <p>Was there any resistance to this project from clinicians?</p>	<p>Ward, Hemingway, and Daniel (2005); Byrson (1998); Freeman (1984) – The role of the stakeholders and their interests.</p> <p>Davies and Harrison (2003) – Clinician/manager relationships</p> <p>Kling (1980); Ury, Brett and Goldberg . (1993) – Stakeholders’ behaviour, conflict between stakeholders’ interests</p>
Communications	Describe the communication associated with this project	Hendy, Reeves, Fulop, Masseria (2005) – Impact of communication on NPfIT

Training	Describe the training that has been provided for this system? How do newcomers get trained on the system? Do you have access to training manuals and instructions?	Central Computer and Telecommunication Agency, (2000) – IT skills requirements
Benefit realisation	<p>What were the intended benefits of the system? Were you aware of them at the start?</p> <p>Were the intended benefits documented in a benefit plan?</p> <p>What benefits have been realised?</p>	<p>Ward and Daniel (2006) – Benefits management and implications of poor benefits management.</p> <p>NAO (2006) – Benefits realisation is a key success factor.</p> <p>Peppard and Ward (2005) – Ways of realising benefits</p> <p>Banker, Rajvivi, Kauffman and Mahmood (1993); Berger (1988); Mahmood and Sczewczak (1999) – Structured approach to realising benefits</p> <p>Cabinet Office (2000) – Reasons for failing to realise benefits</p>
Change management	<p>What changes in the working practices have taken place as a result of the project, and how were they managed?</p> <p>Has this project been co-ordinated with any other change initiative that was taking place at the hospital?</p>	<p>NAO (2006) - Effective management of change, is a key success factor.</p> <p>Gardner and Ash (2003); Benjamin and Levinson (1993); Manzoni and Angehrn (1997) – The reason of the failure of an IT project is lack of focus on change management</p> <p>Cabinet Office (2000) – Organisational focus on introducing IT systems, rather than the entire change the organisation needed</p>
Stakeholder management	<p>Who are the stakeholders of the project?</p> <p>How was the customer/supplier relationship?</p> <p>How was the management/clinicians relationship? And was it impacted by this project (and if so, how)?</p>	<p>Freeman (1984); Greenley and Foxall (1998); Scott and Lane (2000). Stakeholder definition. Carroll (1989); Clarkson (1995); Mitchell Agle and Wood (1997)</p> <p>NAO (2006). Complex customer supplier relationship and direct contact between them.</p> <p>McCartney, Brown, and Bell (1993). Tense relationship.</p>

	<p>What benefits does each stakeholder want from this project?</p> <p>What behaviours and attitudes did the stakeholders exhibit in relation to this project?</p> <p>How have stakeholders' power and influence impacted this project?</p> <p>How were the relationships between the stakeholders impacted by this project?</p> <p>What has been done to manage the different interests of the stakeholders?</p>	<p>Nelson (2005), different stakeholders' interests.</p> <p>Ward, Hemingway and Daniel. (2005), stakeholders behaviours and management styles</p> <p>Mitchell Agle and Wood (1997); Boonstra, Boddy and Bell, (2008)</p> <p>Boonstra, Boddy and Bell, (2008)</p> <p>Gabris and Ihrke, 2007 – middle managers impact implementation and are influenced by supervisors.</p>
Project leadership	<p>Who was leading the project (Was it IT, Clinicians, or jointly led)?</p> <p>What was the position and the credibility of the project leader/sponsor in the organisation?</p> <p>How did the project leader/sponsor run the project?</p> <p>Were there any changes in the project leadership during the life of the project?</p> <p>What was the role of middle and junior managers in implementing the project?</p> <p>What are the project leader's attributes?</p> <p>How did the project leader manage conflict between stakeholders?</p>	<p>Kerzner (2006) – IT focused leadership.</p> <p>Gabris and Ihrke (1996); Church (1995); Gabris, Golembiewski and Ihrke (2001); Gabris and Ihrke (2007)</p> <p>Bass (1985); Yukl (1998); Avolio, Bass and Jung (1999). Leadership styles</p> <p>Gabris and Ihrke (2007)</p> <p>Bass (1985); Yukl (1998); Avolio, Bass and Jung (1988). Leadership styles</p> <p>Mitchell (1997); Boonstra, Boddy and Bell, (2008)</p>

### **3.4.3 The Structure of the Interviews and Links with the Literature**

Face-to-face semi-structured interviews were used. Clinicians, managers and other staff were interviewed. Twenty one members of staff were interviewed across the two organisations and several GP practices. The interviews lasted for approximately 60 minutes each. The interviews were recorded and transcribed. The participants were offered the opportunity to check the authenticity of the transcriptions.

A number of key areas that impact benefit realisation and project success were identified from the reviewed literature in project one and project two and have formed the basis for constructing the interviews' themes and questions. Table 20 sets out the key areas that were discussed during the interviews, the questions that were asked in each area and the links with the reviewed literature. The new questions that have been added to the question list from project one are listed in section 3.3.4.

In addition, there were many questions that were relevant to the management of stakeholders that have been discussed under different themes and that will feed into the final conclusion of each case study.

### **3.4.4 Selecting the Participants**

The hospitals identified the key departments within their and other organisations that use the theatre and the OCS systems. A stratified sample was identified that provided a mix of participants from different disciplines and across key departments. The approach to identifying participants that met the requirements of the stratified sample was to use the hospital staff directory. The participants come from disciplines such as clinical, management and administrative. The final list of participants (realistic list) was not exactly the same as the initial (ideal) list; this was due to a number of practical issues including difficulties in getting access to very busy clinicians. Organisation four provided a full list of the GP practices in the area. The author contacted at random the practice managers of several GP practices to gain access and to identify the relevant staff within each practice who could be interviewed. After discussions with the practice managers it was agreed that GPs, practice nurses and the practice managers were suitable candidates for interviews. This was due to their involvement in the project and their use of the system.

The participants were sent information about the interviews, in advance of the interviews taking place. If a selected individual was not willing to participate, or not available, then one of the two following approaches was used to identify another potential participant:

- c) The service manager of the department concerned was asked to suggest an alternative participant within their department, mainly based on their availability. (This was subject to the availability of the service manager).
- d) The staff directory was used to identify an alternative participant.

A professional third party was used to transcribe the interviews and all the participants were offered the opportunity to check them.

### 3.4.5 Quality Criteria for Data Collection

The quality criteria for the data collection and the evidence used to satisfy the quality requirements are shown in table 21, below.

**Table 21 Quality criteria for data collection for P2**

<b>Criteria</b>	<b>Evidence</b>
Select a random sample of participants.	Done ( see section 3.4.4)
Use multiple sources of data such as interviews, business cases, project plans, etc.	Done (See section 3.4.2)
Establish linkages between the questions asked during the interview and the reviewed literature.	Done (See section 3.4.3 and table 19)
Use a variety of participant groups, such as clinicians, senior managers and administrators.	Done (See section 3.4.4)
Record and transcribe the interviews.	Done. All the interview recordings were transcribed by an independent professional third party. (See section 3.4.3)
Offer the participants the opportunity to authenticate their transcriptions.	Done (See section 3.4.3)

## 3.5 North East Trust

### 3.5.1 Introduction

The implementation of the Theatre System in North East NHS Foundation Trust (case study three) and the implementation of the order communication system (OCS) in North NHS Foundation Trust (case study four), across number of GP practices and the PCT were studied. This examination was undertaken using semi-structured interviews and access to various documents including the business case. Ten members of staff were interviewed in case study three and thirteen in case study four. For the theatre system implementation the interviewees included consultants, nurses, and managers, from different departments across the hospital. The interviewees were five consultants, two nurses and three managers. For the OCS the interviewees included managers, doctors, and nurses from the hospital, from various GP practices and the PCT. The interviewees were seven managers, four doctors and two nurses. The spread of the interviewees over various departments and different roles across the organisations helped the researcher to capture views from a range of perspectives and different organisational settings.

## **3.5.2 Case Study Three: The Theatre System at North East NHS Foundation Trust**

### **3.5.2.1 Background – North East NHS Foundation Trust**

North East NHS Foundation Trust (RFT) is a hospital situated two miles south of North East town centre in pleasant suburban surroundings. The first phase of the development opened in 1970s, phase two in 1980s.

The Trust provides a comprehensive range of hospital-based Medical, Surgical, Paediatric and Obstetric & Gynaecological services which are all located on this one site. The hospital is a major provider of high quality health care in North East. There are approximately 700 inpatient beds on site with excellent and modern facilities.

Historically the Trust has not invested sufficiently in information technology, as indicated by the Trust IM&T strategy 2006. Until June 2007, the Trust's IT infrastructure was very poor and to date there are still major departments without IT systems to support their daily work. The baseline assessment of IM&T that was undertaken in 2008 indicated that the Trust lacked the following:

- A clear IM&T strategy
- Senior, stable and effective leadership
- Commitment to invest in IM&T
- A clear understanding of how IM&T can support the delivery of the corporate objectives.

However over the past three years (2006-2009) the Trust has made major changes in the senior management team that included the appointment of a new director of Informatics. The current chief executive has a background in IM&T and is a great believer in the role of IM&T in improving health care services.

The Trust launched its new IM&T strategy in January 2008, which is aimed at transforming the delivery of health care services through the use of appropriate technologies. The Trust committed a multi million pound budget to be utilised over the next three years, to deliver an up-to-date infrastructure and an integrated Electronic Patient Record system.

The theatre system in its current format was implemented in 2007 in response to a government target to improve theatre efficiency across the NHS. The RFT formed a project board with representation from the key stakeholder groups, Surgery, Anaesthetic, IT and Management, to procure and implement a new theatre system. The Trust developed a statement of needs that defined the business requirements, the functional requirements, the expected benefits, and the criteria for assessing suppliers' responses. However there was no business case in place and no cost benefit justification.

The Trust also classified the expected benefits into two different areas:



#### “Benefits to the Trust

1. More accurate costing and pricing of surgical care
2. High throughput of patients through day case unit
3. Improved audit of the effectiveness of surgical care
4. Identification of all resources to encourage more efficient use of theatres and aid internal trading

#### Benefits to the Anaesthetic and Theatre

1. Elimination of avoidable under running of operating theatre sessions.
2. Reduction of avoidable over running of theatre sessions
3. Improved use of theatre staff time and skills
4. Cost reduction through improved stock and budgetary control
5. Improved ability to schedule equipment and consumables
6. More timely and efficient production of operational and management information
7. The collection of organisation and presentation of information on day surgery patients optimising a high quality, safe delivery, cost effective, patient service.”

### **3.5.2.2 The theatre system**

The theatre system in this case study was provided by iSoft and is called Galaxy. iSoft is a well established supplier in the UK health market and provides clinical applications to hospitals worldwide. They have a large portfolio of clinical applications, including patient administrative systems, theatre systems, order communication systems etc. However iSoft have experienced some problems in recent years and have been taken over.

The Galaxy system was implemented at the RFT three years ago, following an initial case of need from the surgery department, which had to react to government requirements to improve the efficiency of the theatres within NHS hospitals. A procurement process was undertaken, which resulted in the selection of the Galaxy iSoft product. The system was not mandated by the government and the Trust had the freedom to select the system that met their requirements. The Trust was responsible for funding the project, and no government subsidy was offered.

The benefits of this implementation were to be primarily for the surgery and the anaesthetic departments, the direct users of the system, and then for other departments within the hospital, the GPs and the patients. Therefore the impact of stakeholder management and cross-organisation working on project outcome and benefit realisation are important areas to explore.

The system was intended to be used by the surgeons, the anaesthetists, other clinical staff and managers. The system impact extends beyond the boundary of the surgery department, because it handles patients that have been referred for surgery from

various departments within the hospital. These patients would have been normally referred to the hospital from outside agencies such as GP surgeries. The system also captures important information about patient treatment. Such information is used by other clinicians across the hospital and could be transferred to the patients' GPs. Initial assessment of this system and its deployment indicated that most of the clinicians were not happy with the system, and a few of them have developed alternative electronic tools to capture and manage the information they need outside the theatre system. Due to this lack of success this system was selected for project two.

The Galaxy system was selected by the organisation because of its depth of functionality and its potential to improve the quality of services to patients. The key capabilities of the system include, according to the supplier's published specification:

- schedule patients to outpatient clinics
- manage surgical waiting lists
- schedule patients and resources to theatre
- schedule personnel
- maintain inventory and stock control
- monitor the preoperative progress of patients
- enter patient assessment and care plans
- provide cost, budget and contract information
- produce all patient documentation
- interface to other systems
- provide management and audit information
- provide clinical analysis reports.

Galaxy provides managers and clinicians with the functionality to use resources, manage costs and deliver improved quality of service to patients. The system has a range of modules designed to address the specific aspects of resource management and the patient theatre episode. Through the integration of the modules, the system streamlines the administrative and planning of the patient theatre episode and related resource scheduling. The system enables theatres' managers and clinicians to schedule patients, plan capacity and, via procedure profiles, bring together the appropriate staff, stock and equipment required for the patient episode, based on the individual surgeon's preferences. This provides the ability to compare and make "what if" projections to assess under- and over-capacity and monitor the effective use of budgets. The system enables the generation of an electronic patient record based on the individual patient episode, providing the facility to perform extensive clinical audit and integrate management information.

For theatres - a complete record can be made of all activity associated with the patient episode from the time the operating room calls for the patient to the time the patient is discharged from the recovery room. The system is designed to collect this information in real time with an option for retrospective input, should this be required. Eleven standard times can be collected and further user-defined times can be

configured. A detailed log is maintained, recording the administrative procedures and by whom, and the drugs, resources and equipment used with costs. Coding systems including ICD, OPCS and Read are supported; local codes can be mapped if required. Reports on usage, throughput and workload can be produced. (The supplier published specification)

### **3.5.2.3 Interpreting the data – the theatre project**

Ten members of staff from RFT were interviewed and their profiles are discussed and summarised in table 22.

- A. Consultant Anaesthetist
- B. Senior Nurse, Sister and Deputy Theatre Manager
- C. General Manager
- D. Divisional Patient Services Standards Manager
- E. Consultant Surgeon
- F. Consultant Breast Surgeon
- G. Consultant General Surgeon
- H. Consultant Surgeon
- I. Theatre System Manager
- J. Team Leader and Ophthalmic Nurse

The consultant anaesthetist (A) was a young and enthusiastic consultant and used a small part of the system on a regular basis. He believed that system did not have rich clinical functionality and that that was one of the main reasons preventing consultants from using it. He believed the consultants rebelled against any system that did not provide them with direct benefits. However he valued the use of appropriate information technology systems in the health sector.

The Senior Nurse, Sister and the Deputy Theatre Manager (B) was a heavy user of the system, mainly for administrative purposes, producing reports on the utilisation of theatres and monitoring the time taken by staff to undertake specific procedures. She believed the system would be used by more clinicians if it was fully integrated with information systems used in the hospital.

The General Manager of the Clinical Support Services (C) was a regular user of the system and used it to provide management information. She was the senior manager responsible for the management of all the hospital theatres. She believed the system was procured in response to a government initiative to improve the utilisation of theatres across the UK. Her involvement in the initial stages of the project was limited; therefore she was not able to answer some of the questions.

The Divisional Patient Services Standards Manager for the Clinical Support Services (D) was an occasional user of the system but was heavily involved in the initiation and the running of the project. She was generally positive about the project and its outcome. She believed the system supplier did not deliver the full contractual

system requirements, and this was one of the reasons that stopped some professional groups from using the system.

The consultant surgeon (E) was an occasional user of the system, a computer enthusiast and holds a degree in IT. He developed his own electronic theatre system and believed the Galaxy theatre system was not used by clinicians because it did not offer them any benefits. He also believed that clinicians' views were ignored during the system implementation.

The Consultant Breast Surgeon (F) was an occasional user of the system. She believed that no training was offered or available to clinicians. She believed the system could be useful for clinical audit but that clinicians lost faith in the system and the data produced by it, as they kept finding mistakes and inaccuracies in the data.

The Consultant General Surgeon (G) was an occasional user of the system. He was an IT enthusiast and a member of various IT committees. He did not like or use the system. He also believed that clinicians were not engaged, motivated or encouraged to use the system. He believed the system would not be missed by the consultants if it was taken out.

The Consultant Surgeon (H) was an occasional user of the system. He was interested in the use of information technology to support clinical practice and believes the Galaxy system could be useful if proper training was provided and if the system could be configured to meet the clinicians' requirements. He developed his own template to capture his clinical notes. He believed that the consultants would not miss the system if it was taken out.

The Theatre System Manager (I) was a heavy user of the system. He described the project as successful and believed the system was very useful for providing information to help to improve theatre efficiency and the overall productivity of the theatres and the consultants. However he acknowledged that there were several problems with the project. One of the key problems was the commitment of the supplier to develop and maintain the system, due to the fact that the ownership of the system has changed several times in recent years.

The Team Leader who also was an Ophthalmic Nurse (J) was a heavy user of the system and believed the project was successful. The system provided her with all the management information she needed to monitor the utilisation of theatres and patients' movements in theatres. She believed the system was an administrative system rather than clinical, and the consultants had their own alternative systems for capturing clinical information and therefore did not use the Galaxy system.

**Table 22 Summary of the interviewees' profiles at RFT**

Name	Role	Comments	Use of the system
A	Consultant anaesthetist	He believed the system was useful for monitoring productivity and efficiency, but had no impact on the care provided to patients.	Regular user

B	Senior nurse and Sister, Deputy Theatre Manager	She rated the system as average, and used it mainly for administrative purposes. She believed interfacing the system with other clinical systems such as PACS would make it more appealing for consultants.	Heavy user
C	General Manager for the Clinical Support Services Division	She used the system for administrative and management purposes, to monitor activities. She believed the system was useful for governance and audit, and could improve patient safety.	Regular user
D	Divisional Patient Services Standard Manager (DPSSM)	She used the system for administrative and management purposes, and believed the system was not used by consultants. She believed they had several problems with the supplier and the system was never signed off.	Occasional user
E	Consultant surgeon	He was an IT enthusiast and developed his own IT system. He believed the theatre system was not designed for clinicians and would not be missed if removed.	Occasional user
F	Consultant breast surgeon	She believed the system was an administrative and audit tool, but she felt she could not rely on the information produced by the system. She believed clinicians did not like the system.	Regular user
G	Consultant general surgeon	He was an IT enthusiast, and developed his own database to capture clinical information. He believed the system was not very useful for clinicians and created tensions between clinicians and managers.	Occasional user
H	Consultant surgeon	He believed the system had not been promoted or marketed to clinicians. He had not received any training and has developed his own template to capture his operative notes.	Occasional user
I	Theatre Information Manager	He was the system expert, and used it for administrative and management purposes. He believed the system had clinical and administrative functionalities but only the administrative part had been exploited.	Heavy user
J	Team Leader for Ophthalmic Theatres	She believed the system was an excellent management tool for activity and patient movement monitoring. She thought the project could be judged as a success, as the system provided her with the information she needs.	Heavy user

NVIVO was used as a tool to aid the data analysis through an effective data reduction technique. The outcome of the data reduction from NVIVO is illustrated in

figure 19. NVIVO illustrated the data in a hierarchical structure, through the use of father child relationships. It also aided the researcher to explain, by using the coded data, the causes of a particular phenomenon.

For example, one of the factors that was recognised as having a negative impact on the project outcome was the credibility of the project leader. In NVIVO this was represented by a direct connection between the negative factors circle and the leader credibility circle, indicating that this was a negative factor and that the negative factor circle is the parent and the stakeholder power and influence is the child. The interviewees gave two reasons for this: first the leader was not good with people; and second, the leader was system focused. These two reasons were illustrated in the NVIVO outcome as per figure 19, and shown as having a parent child relationship to the leader credibility.

## **Theme One- Investment decision and business case**

None of the interviewees were involved in making the investment decision, but half of them were aware of it. This was due to the fact that the organisation was urged by the Department of Health to respond to a national initiative to improve the utilisation of theatres. This led to a few senior managers discussing and agreeing the procurement of the theatre system. The project board indicated that the Director of Finance and the Head of Information were involved in making the investment decision. Unfortunately both of them have left the organisation and could not be interviewed.

Once the decision was made, it was then discussed and well received at the project board. This led to an improved level of awareness amongst the project group and some of the theatre staff. The interviewees that were aware of the investment decision include the senior nurse, the DPSSM, Surgeon E, the system manager and the team leader nurse.

The level of involvement and awareness of the business case was very weak. This could be because business cases are complex technical documents and their development requires input from specialist personnel, and usually they get shelved once the investment decision is made, as indicated by the NHS London Capital Investment Unit (2006). Only the DPSSM had an input into the development of the business case. Surgeon E, the system manager and the DPSSM were aware of the business case.

Although some staff were encouraged to express their opinion regarding the investment decision, generally staff felt that the decision had already been made and their opinion would have little impact. The senior nurse said, *“It got done to us.”* Surgeon E said, *“The Trust saw massive changes in leadership and at the time our views were put aside, and the clinicians did not have much say.”* The project board minutes indicated that key decision makers in the project were the Director of Finance and the Head of Information.

In summary there was a low level of involvement in making the investment decision but half of the interviewees were aware of it. There was a low level of involvement and awareness of the business case.

## **Theme Two – Project structure**

There was a good level of awareness of the project structure and most of the interviewees were able to identify some of the staff on the project board. Three of the consultants were not aware of the project structure: the breast surgeon, the general surgeon and surgeon H. The system manager stated, *“We had a project board and a project group structure feeding back to higher level IT board.”* The level of involvement in the project structure was low. Only the DPSSM, the system manager and surgeon E were involved. However the project governance structure document and the project board minutes highlighted the involvement of senior managers and clinicians in the project management structure. The clinical representation included the Medical Director, the Clinical Director of Theatres and the Clinical Director of Surgery.

The purpose of the other five questions in this theme was to determine which professional group led the project and the seniority and the stability of that leadership. All the interviewees were very clear that this was a management-led project, and no one believed it was led by clinicians or was jointly led by clinicians and managers. However, only half of the interviewees were able to comment on the stability and the seniority of the leadership, due to their lack of awareness. Only the DPSSM believed that the project had senior leadership, and only the senior nurse believed that the leadership was stable. One of the consultant surgeons stated, "*There wasn't an obvious leadership, and that is something we need.*" The breast surgeon stated that, "*The leadership changed regularly.*" The Anaesthetist stated, "*I never saw who was the figurehead for the Galaxy project.*" The organisation leadership has undergone several changes during 2006 and 2007: the Trust board membership and the corporate directors and the Chief Executive have changed during this period.

The senior sponsor of the project was the Director of Performance and Information. The project was driven by management in order to meet or satisfy the government efficiency targets, and it was unclear how much the clinicians managed to influence the direction or the objectives of the project.

### **Theme Three - Implementation**

The consultants commented on the effectiveness of the implementation, as they were the only professional group that was dissatisfied with the system. The other interviewees did not have strong views on the implementation approach. All the consultants believed that the implementation was not very effective. This was mainly due to three reasons. First, the clinical functionality of the system was not exploited or given enough attention during the implementation; second, training was not available; and third, they felt there should have been a better consultation with consultants to understand their needs for clinical functionalities. Although the other interviewees did not have strong views on the effectiveness of the implementation, some of them (The DPSSM and the system manager) commented on the fact that the system has not been signed off as fully implemented due to the fact that key interfaces that were formally requested have not been developed.

The DPSSM said, "*We specified a system that should interface with the hospital Patient Administrative System, but it did not. They were working on it but never succeeded, so it never interfaced as well as it should do, which was one of the reasons that made life difficult for people using it.*" The system manager stated, "*To be fair there is not really a great deal of clinical information collected, there is not a lot of clinical information in there, but that's not to say that there couldn't be.*"

On the areas of system support and reliability, all the five interviewees that answered the question believed that system support was available: they were the anaesthetist, the DPSSM, the breast surgeon, the general surgeon and the system manager. They were all from the hospital, as the GP practice staff did not have a direct relationship with the system supplier. On system reliability all the six interviewees that answered this question confirmed that the system was reliable. Those who did not



answer the question included the senior nurse, the general manager and the two surgeons, as they were not heavy users of the system with the exception of the senior nurse. The breast surgeon stated that, *“The system does not crash very often, it does occasionally, but that’s with every system ... the IT help desk have been very friendly, they are always helpful.”* The system manager stated that, *“The software itself is absolutely bulletproof...there have been very, very few problems with it.”*

The final area that was examined under this theme was concerned with determining if the system was seen by the users as administrative, clinical or both. All the interviewees apart from the DPSSM believed that the system was an administrative system and not clinical. The DPSSM believed the system was both administrative and clinical, especially following the most recent interface to a successful clinical system, PACS. Few clinicians believed the system had clinical functionalities that had not been exploited by the organisation or the project. The anaesthetist stated that, *“It most seems administrative at the moment but I think that’s just a result of implementation.”* The general manager stated that, *“The system probably has been viewed more as a management tool.”* The general surgeon said: *“I do not see it as a clinical system. I see it as an administrative tool for basically logging flow through theatre.”*

In summary, the consultants felt strongly about the implementation and commented negatively, the rest were content with it. System reliability and availability did not cause problems and there was a general agreement that the system was an administrative rather than a clinical system.

#### **Theme Four – The role of the clinicians**

There was a consensus that the system was being used by the managers and the nurses, but not by the consultants. The nurses used it for tracing patients’ movements and for recording some administrative details. The majority of the interviewees believed the system was not used by clinicians, and only the general manager, the senior nurse and the team leader nurse believed that clinicians did use the system. The consultants confirmed that they did not use the system.

It was clear from the interview answers that when interviewees say clinicians use the system they refer to nurses and not to consultants, and when consultants talk about clinicians not using the system they refer to consultants. This may be a cultural or a status issue, but it was taken into account when analysing the results.

Half the interviewees answered the question relating to the initial clinician resistance. The DPSSM, surgeon E, and the breast surgeon believed there was no initial clinician resistance; the others that believed there was initial clinician resistance were the system manager and the team leader nurse. Therefore the answers to this area were not conclusive. However what is clear from the project minutes and project structure is that senior clinicians were involved. There was a limited initial clinician resistance, as some of the interviewees experienced it, but it was not widespread as not everyone was aware of it.

All the interviewees believed that there was clinician resistance to the use of the system when this study took place. The resistance relates to the consultants and not to the nurses, for reasons that were alluded to here but will be discussed in more detail in theme ten.

The great majority of interviewees answered the question relating to the clinicians engagement and involvement. The senior nurse, the general manager, the DPSSM, surgeon E, the system manager and the team leader nurse believed that clinicians were engaged and involved. However surgeon E indicated that the involvement and engagement of consultants was at the early stages of the project and not now. The reasons behind this will be explored in more detail in the next section.

The evidence that supported the strong initial clinical engagement included the project board membership and the project minutes. The answers of the interviewees and the information that was examined from the project documentation paint a picture of a strong initial clinical engagement that was lost along the way or turned into a resistance from the consultants.

The interviewees believed that at the time of this study there was no consultant ownership at all to the theatre system. The anaesthetist explained the reason for the lack of use of the system by stating that, *“It does not seem to impact directly on clinical care, it gets prioritised low on the list of things that we want to do or have to do.”* Surgeon E explained the reasons behind the lack of clinical use and ownership of the system by stating that, *“The system has to support their clinical needs, it has to support their personal development, and it has to support the learning process. It has to support their own audit for validation, licensing, revalidation. The Galaxy system does not do any of this.”* Surgeon H commented on the lack of clinical engagement by saying, *“The thing not to do is to implement something without active engagement with the end users and expect us to take it as it is.”* The system manager stated that, *“The clinicians have got quite deep-seated dislike of the system.”*

By examining the project documents, including previous minutes and project governance structure, it was clear that senior clinicians were represented on the board. The project governance structure showed that the theatre system project board role was described as, “oversees implementation and authorises payments” (Project governance document). This document, together with the project minutes, showed that the project board was chaired by the Director of Finance or the Head of Information and it had the following members: the Clinical Director of Theatres, the Theatre Manager, the Medical Director, the Clinical Director of Surgery and the Project Manager. These documents also highlighted that the implementation was overseen by a small group that included the project manager, the theatre manager and an interface specialist.

Generally the consultants did not use the system, believed that they were not involved, not trained and not properly consulted. The consultants indicated that the system was used by the managers and the nurses. The general surgeon said, *“I do not get involved with the Galaxy system: the nursing staff tend to do most of it themselves and tend to keep us away from it, really, wherever possible.”* The nurses indicated that they used the system and generally they have been engaged, but felt that the decision

was already made to implement the system. The senior nurse indicated that, “*We were encouraged to give our own opinion but it went ahead anyway.*”

The majority of the consultants indicated that the quality of the information that was produced from the system was poor, and this was one of the reasons that they did not use or continue to be engaged with the system. It was also clear from the managers’ comments that the system was used to produce information to aid the performance management of clinicians and particularly the consultants. This has increased the consultants’ resentment of the system.

The key message from this area is that the system was used by the managers and the nurses and not by the consultants. The consultants believed that the system did not serve their day-to-day needs and did not offer clinical functions, and some of them believed the system was used to monitor and manage their performance.

### **Theme Five – Communications**

Overall, the response to this theme was very negative. Two questions were asked under this theme to examine the variety of communication methods used and whether or not communication was sufficient. The great majority of the interviewees believed that the communication was not sufficient and did not cover a variety of methods; however the DPSSM believed otherwise. She indicated that regular meetings used to take place with the staff that were impacted by the system, to raise awareness of the system and its capabilities.

The general surgeon, when asked about communication, stated: “*I do not think there’s been anything.*” Surgeon E stated: “*I do not think there is enough communication.*” The senior nurse stated that, “*There were no newsletters, no briefings or things like that.*”

The implementation was focused on rolling out the system within the theatres, and it seems that they aimed the communications at the theatre staff rather than other key stakeholders such as the surgeons, or other hospital departments that were impacted by the system. Cascading of key messages from the project board and the project team either did not occur or was ineffective. For example the Clinical Director of Surgery was a member of the project board, but most of the surgeons were not fully aware of the project’s aims, objectives, scope or progress.

### **Theme Six – Training**

Overall this theme received a negative response from the interviewees. The majority of the interviewees that answered the question believed the training was not sufficient or not available at all. Those who gave positive answers include the senior nurse, the DPSSM, and the team leader nurse. The majority of the interviewees preferred the informal, short and flexible to the dedicated and formal training. The senior nurse and the team leader nurse believed that training was available to newcomers.

All the consultants believed that there was no training available and said that they had received none. Surgeon E stated that, *“There was no training for the clinicians, not as far as I know; there was not a Galaxy-specific training session.”* The breast surgeon stated that *“Nobody ever trained us, no training, nobody even told us.”* The general surgeon explained his personal experience in relation to training *“We have never been trained on it, never been shown how to use it or whatever, never been encouraged to get involved in its use.”* Similarly Surgeon H stated that, *“Nobody has actually taken any steps to show us as users how we can input information or how we can extract useful information from it.”*

### **Theme Seven – Benefit Realisation**

A number of areas have been explored under this theme, including awareness of benefits by staff, the systems and plans that were used to realise and monitor the benefits.

The majority of the interviewees that answered the question relating to the awareness of benefits responded positively, with the exception of the two surgeons. The anaesthetist stated that, *“The benefits are, we can generate data about what’s happening in theatre. I can see it as highlighting the flow of patients through theatre and being able to track it and see where the delays are, where we are being inefficient.”* The DPSSM stated that, *“Knowing which patients have had operation in theatres. Being able to know how long those operations take...tracking the equipment, those are the real benefits.”*

The majority of the eight interviewees that answered the questions relating to the routine realisation of benefits responded negatively. The DPSSM, the system manager and the team leader nurse believed benefits were being realised routinely. On the question of the existence of a formal benefit plan, the majority of the interviewees that answered this question believed there was no plan in place. Surgeon E stated: *“There are no documents that I am aware of, no. If there are they are not well publicised.”* The breast surgeon stated: *“It might help if somebody showed it to me, but I have never seen it.”* The other interviewees included the DPSSM and the system manager. All the eight interviewees that answered the question relating to the auditing of benefits believed no audit of benefit realisation had taken place.

The final two questions under this theme were focused on determining if the system offered benefits to managers and clinicians. The majority of the interviewees that answered the question confirmed that there were benefits to managers. However, surgeon H did not believe so. The team leader nurse said, *“As far as management goes, it’s an excellent tool for getting information that they want and seeing how they can make better use of their theatre times.”* The senior nurse said, *“The biggest benefit currently is capturing data for management.”*

On the questions about benefits to clinicians, the majority of the interviewees believed the system did not offer any benefits to clinicians. Only the DPSSM believed that there were some benefits to clinicians, particularly after the installation of the recent interface with the trust PACS system. Surgeon E said, *“The system has to support*

*clinicians' clinical needs, personal development and learning process. Galaxy system does not do any of this."*

In summary, this is a system that has not been used by most of the clinicians, and the benefits that have been described by the interviewees relate to improving performance and efficiency and not directly improving clinical care. The great majority of the interviewees were not aware of any benefit plan or formal audit of benefit realisation.

### **Theme Eight – Change management**

Overall this theme did not receive positive responses, indicating that the changes were not managed effectively. Just over half of the nine interviewees believed that changes in working practices did not take place as a result of implementing the theatre system. Those that believed changes in working practices had taken place included the anaesthetist, the senior nurse, the general manager and the DPSSM. However these changes were confined to the use of the system rather than across the patient journey. This was expected, to a large extent, as the system is a standalone and did not interface or integrate with other hospital systems.

All the nine interviewees that answered the question about the planning and the execution of change believed the change was not planned or executed well. The general manager described the management of change by stating, "*We just do it and adjust as we go along.*" The DPSSM stated that management of change was "*still going on, but all the changes seem to happen in theatres and with the theatre staff. The changes that do not happen are the people that are the users of theatres ... the surgeons.*" The breast surgeon stated that no management of change has taken place: "*It's unfortunate, because clinicians are not involved at every stage.*"

Finally, only half of the interviewees were able to comment on the co-ordination of change across the organisation. They were the general manager, surgeon E, the breast surgeon, the system manager and the team leader nurse. Only the general manager believed that the change was co-ordinated with other change initiatives across the organisation.

### **Theme Nine - Project Success**

The majority of the interviewees stated that they would not miss the system if it was taken away; however the senior nurse, the general manager and the system manager stated that they would not go back to the old system and they would miss the system if it was taken out. The DPSSM believed that the clinicians would not miss the system but the managers would. The team leader nurse, who was a heavy user of the system, said she would not miss the system if it was taken out, mainly because it was an administrative burden. The anaesthetist believed that if the system was taken out "*the same level of care would probably still exist*". Surgeon E was forthright with his assertion that, "*Nobody would care if the system was taken out.*" The breast surgeon said, "*I do not think it impacts that much on my practice.*" The general surgeon said, "*I do not think it will impact on me in the slightest if you terminated the system.*"

The general manager, the DPSSM, the system manager and the team leader nurse believed the system was successful, while Surgeon E and the general surgeon believed the system was not successful. The rest of the interviewees believed the system was neither a total success nor a total failure. Generally the interviewees acknowledged that the system served an administrative requirement and a monitoring or a performance role, even though the consultants did not trust the information that emerged from the system. These answers start to point to some issues of mistrust between managers and consultants and, furthermore, the reluctance of consultants to accept being performance managed.

### **Theme Ten – Stakeholder Management**

This theme combines the stakeholder relationship theme from project one with new questions that were developed following the stakeholder management literature review in project two.

All the interviewees were able to identify the project stakeholders, with the exception of the breast surgeon and the general surgeon, who did not answer this question. Only the DPSSM and the system manager answered the question about the customer supplier relationship, as the majority of the interviewees did not interact directly with the supplier. The DPSSM indicated that the supplier did not fulfil all their contractual obligations, such as interfacing the system to the hospital Patient Administrative System. The system manager stated that, *“The relationship with the supplier was difficult, because the software changed hands several times.”* The customer/supplier relationship was difficult due to the fact that the original supplier of the system was taken over and the company changed hands frequently over a period of a few years.

Those that answered the questions relating to the impact on the project on stakeholders’ relationships were the anaesthetist, the breast surgeon, the general surgeon and the team leader nurse. They believed the system implementation had negatively impacted the relationship between the managers and the clinicians. This was due to the clinicians’ belief that the system was used to monitor their work and their effectiveness rather than to support their clinical work. The team leader nurse stated, *“I still think that the clinicians feel that it’s a tool to beat them over the head with and say ‘work harder’.”*

The majority of the interviewees believed that the system benefited some stakeholders, but not all. The consultants, as indicated under the benefits theme, were clear that the system offered them no benefits. The senior nurse/ Deputy Theatre Manager and the General Manager did not answer this question. There was recognition that the consultants were initially engaged and supportive of the project, but as the implementation started they withdrew their support and did not use of the system. This was mainly due to the fact that the system did not offer the clinical functionality that was expected, and it has been used predominately for performance management. The management were the dominant stakeholder group in this project and their focus was on productivity and performance management. The consultants’ interest was in the clinical

functionality, which was not provided. Their response to this situation was not to use the system, despite the requests from the management team for them to do so.

The great majority of the stakeholders believed that initially the stakeholders' attitude and behaviours towards the project were positive. However the consultants' attitude and behaviour changed once they realised that their interests were not met and the system would not have the key clinical functionality they wanted. The behaviour of the consultants manifested itself in their refusal to use the system, and due to their status in the organisation and the strained relationship between them and the management team, no one seemed to have the power to force them or influence them to change their behaviour.

The anaesthetist, the DPSSM, consultant surgeons E & H, the breast surgeon, the general surgeon and the team leader nurse believed the stakeholders' interests were not managed successfully. This was mainly due to the fact that the consultants did not get the clinical functionality they needed from the system and felt that their interests were ignored or not listened to. However the general manager and the system manager felt that the interests of stakeholders were met. This is because the managers felt they were getting good information reporting from the system that helped them to improve efficiency and throughput to the benefit of the entire organisation.

In summary, the majority of the interviewees were able to identify the project stakeholders. The consultants were initially involved and engaged in the project but later became disillusioned and resisted the system, mainly due to the fact that their interests were not represented and there were no direct benefits to them, due to the fact the clinical functionality was not implemented. . Consultant surgeon H said, *“On first seeing the system two years ago in a demonstration, I really thought this is good thing because it can help you really reflect on your activity and also in your annual appraisal, but I’ve given up using it.”* The breast Surgeon said, *“I do not think it impacts that much on my practice.”* Even though some clinical functionality was added at a later date, this did not alter the consultants' resistance or dislike to the system; having lost faith in the system, it was difficult to recover. The DPSSM said, *“The system could certainly now do operating notes (clinical functionality) and we offer that facility to doctors but they prefer to take the paper record, sit in the staff room and write it up: it’s about their behaviour”*. The management team was the dominant stakeholder group that ensured the benefits they wanted were realised. These were linked to the provision of management information and performance management. The result of this project points out some serious relationship issues in the relationship between the consultants and the management team. The consultants wanted benefits that would improve their daily work and the care of their patients rather than those benefits promoted by the managers that were linked to improved efficiency and throughput.

### **Theme Eleven - Leadership**

This is an additional and separate theme in project two that was briefly discussed in project one under the project structure theme. The few questions that related to project leadership in project one were combined with new questions that were

developed following the leadership literature review that was undertaken in project two. The purpose of the six main questions in this theme was to determine which professional group led the project, the seniority, the stability, the credibility and the style of that leadership. Finally this theme also examines the junior and middle management role in providing leadership.

All the interviewees were very clear that this was a management-led project with a strong IT influence, and no one believed it was led by clinicians or was jointly led by clinicians and managers. The project leader or the SRO who was the main decision maker was the Director of Performance and Information. The SRO was not interviewed as he had left the organisation; however the author had a discussion with his former personal secretary to gain a deeper insight about the SRO and his leadership style. Only half of the interviewees were able to comment on the stability and the seniority of the leadership, due to their lack of awareness. Only the DPSSM believed that the project had senior leadership, and only the senior nurse believed that the leadership was stable. One of the consultant surgeons stated that, *“There wasn’t an obvious leadership, and that is something we need.”* The breast surgeon stated that *“the leadership changed regularly”*. The anaesthetist said, *“I never saw who was the figurehead for the Galaxy project.”* The organisation leadership underwent several changes during 2006 and 2007: The Trust board membership, the corporate directors and the Chief Executive all changed during this period.

The project was driven by management in order to meet the government efficiency targets, and it was clear that the consultants did not manage to influence the direction or the objectives of the project. The project SRO was a corporate director of the trust but not a board member. He was described by his former secretary as a nice, quite person with a pleasant temperament but not inspirational or transformational. He was system and technology focused. The DPSSM said, *“He was a dogged but not inspirational or transformational leader, and was technology focused and not people focused ... He wanted to get the system implemented but did not consider how people needed to use it.”* Generally it was felt that the project leader did not have the required interpersonal skills to foster good relationships with the consultants, and the key drivers for the project were improving throughput and making the necessary financial savings. The DPSSM and four consultants that answered the credibility question believed the project leader was not credible.

The DPSSM, consultant surgeon E, the breast surgeon, and the general surgeon believed that the project could have been run more effectively by ensuring that there were direct benefits to the consultants from the use of the system. However the system manager and the team leader nurse believed the project leadership was fine, as the system was implemented and many staff were using it.

Middle and junior managers from the nursing profession played a role in the project leadership by using and promoting the system to their colleagues. The DPSSM said that *“the middle and junior managers from the nursing group were using and promoting the system, as they felt that they were supported by the IT and the system trainer due to the fact that there were IT and training functions available within the theatre departments.”*

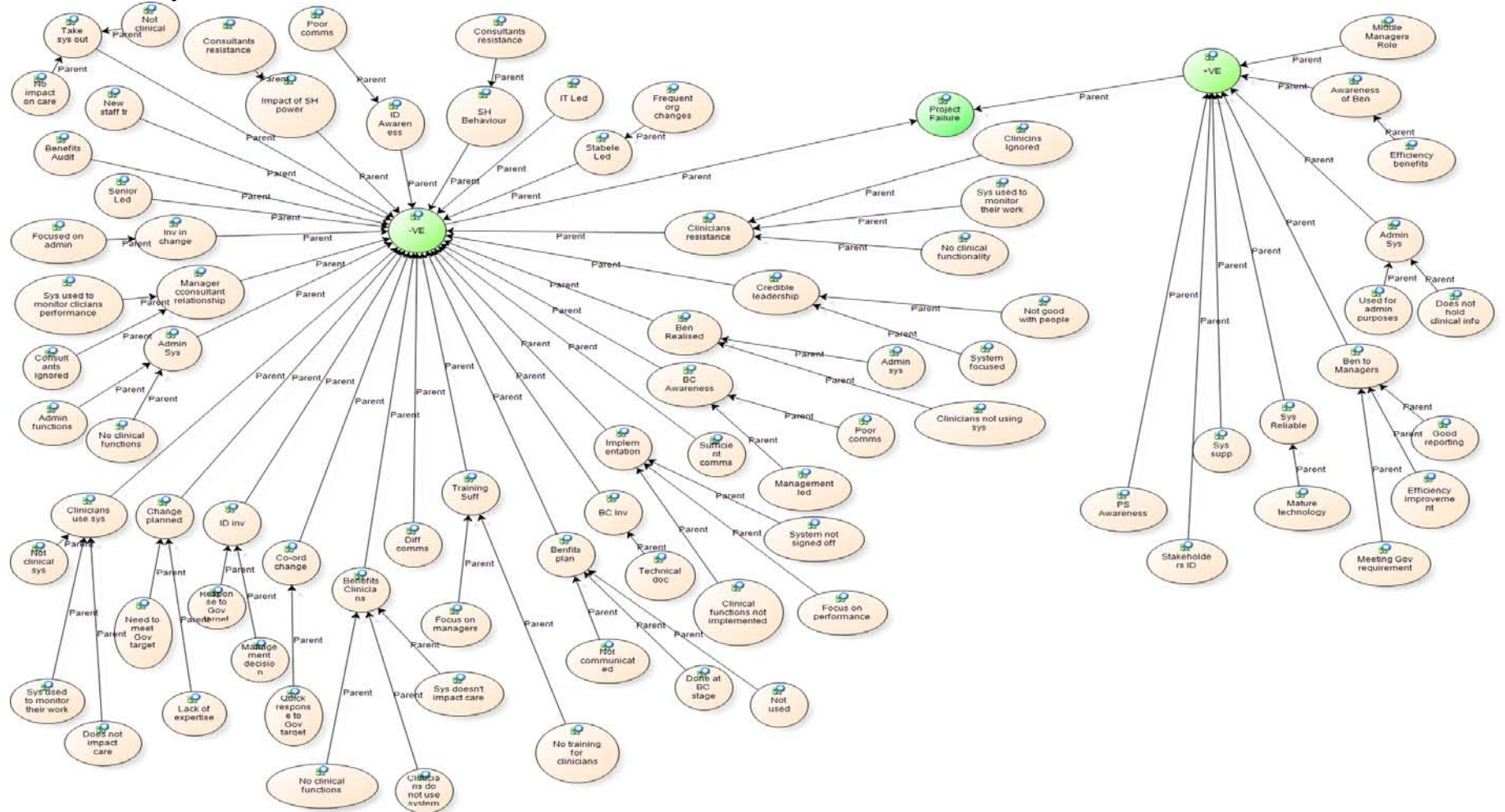


In summary there was a consensus that the project was management-led with great emphasis on IT. The leadership was not very senior, was system focused and not people focused. The leader did not have a clinical background and paid no attention to the clinical functionality of the system. This made the project leader less credible in the eyes of the consultants.

#### **3.5.2.4 Summary of the theatre project**

This project underachieved and it was clear that it was going to struggle from the start. The reasons for the investment and the potential benefits were not sufficient to motivate and engage the consultants. The consultants' views and their interests were ignored. The project had weak leadership and an inexperienced project manager. Communication and training on the system were poor. The implementation focused on the administrative part of the system and ignored the clinical functionality. The consultants had a deep-seated dislike of the system and believed that the managers were using the system to monitor their work and performance manage them. This had increased the tension between the managers and the consultants that were leading the project. Changes in working practices across the patient journey did not take place and the achieved benefits were very limited.

Figure 19 Theatre system



## **3.6 North NHS Trust**

### **3.6.1 Background - North NHS Trust**

“Norh Trust is a Foundation trust, which means it is run by the local community for the local community. The hospital prides itself on being clean and having very low rates of hospital infections. It offers a wide range of world class treatments by caring, helpful professionals and short waiting times. The hospital has some of the latest equipment and is well known for its pioneering work and research.

“Norh Trust is among the leading NHS trusts in the country. As a 450-bed hospital affiliated with a local University, it provides a range of high quality acute hospital services ranging from emergency, maternity, general and specialist surgery to critical care, medicine, elderly people’s services and medical imaging.

“Norh NHS Foundation Trust serves a population of approximately 220,000, and is co-terminus with the local Primary Care Trust (NHS North), and North Metropolitan Borough Council.

“North is in the top 12% of English ‘hot spots’ for multiple deprivation, and has a significant number of public health indicators which reflect this, as reported in the North ‘Joint Strategic Needs Assessment’:

- 32.5% of children overweight or obese
- 13.2% of the population are ‘workless’
- Over 25% of the population are smokers

“Other indicators which reflect the health challenges facing the community include:

- Median household income of £24, 570
- 32% of households across the North Trust area have no access to a car or van (5.4% lower than English average)
- 12.9% (in 2006) of working age population were claiming Incapacity Benefit/Severe Disablement allowance

“Norh Trust was built in two phases in early 1970s and late197. It has over 2500 staff (at 31 March 2008). A wide range of services are offered from the hospital including general medical, surgical, maternity, cancer services and accident and emergency.

#### **The Trust’s Strategic Aims**

“Norh Trust NHS has four strategic aims that underpin its activities. These are to:

- Improve patient care
- Be a good employer

- Further develop the hospital's successful reputation
- Generate a surplus to enable ongoing investment in services/facilities.”

(Norh Trust Web site July 2009)

The trust had experienced serious staff turnover over the past three years at the executive level. Furthermore the Director of IM&T post had been vacant for over two years at the time of this study. The IT department had lacked leadership and direction over this time.

### **3.6.2 The System - GP Order Communication System (OCS)**

This project was implemented in 2007. The purpose of the project was firstly to enable key external stakeholders to request medical tests, such as blood tests, electronically from their desktops, and secondly to enable those stakeholders to view the results of these tests, and other tests undertaken by the hospital, electronically from their desktops in real time.

Most of the benefits of the system are designed to be for the hospital external stakeholders, namely the GPs, the patients, the PCT and the Social Services department. Therefore the impact of stakeholder management, and across organisations working on project outcome and benefit realisation, will be important an area to explore.

NHS Connecting for Health identified the objectives and the potential benefits of implementing OCS, within their web site.

#### **The overall objectives of such projects include:**

- improving the care for the patients, by providing the results of the clinical tests more quickly
- improving the communication with the GPs, the key stakeholders to the hospital
- improving the quality of the service to the GPs
- tying the GPs to hospital, hence securing the business of key customers

For **Pathology Laboratory Services** the benefits include:

1. improved data quality through the use of legible requests and provision of mandatory request information
2. reduction in the repetitive data entry of patient demographics and sample details

3. faster and more efficient specimen reception as a result of improved workload planning and receipt of complete and accurate information
4. improved resource and manpower management as a result of better workload planning
5. overall reduction in sample turnaround times with faster results reporting;
6. fewer enquiries and phone calls to the laboratory from GP practices
7. fewer sample labelling errors

For **GP Practices**, the improved communication with their pathology laboratory service will:

1. help inform the practice about the appropriateness of tests and the correct specimens to take
2. avoid handwriting requests and enable more results to be received and filed electronically
3. provide status updates to track sample progress
4. assure automated filing of results into the patient records
5. facilitate the introduction of decision support which checks the relevance of the request, resulting in fewer requests being rejected
6. help ensure results are available for when patient appointments are made
7. facilitate printing of specimen labels

For **Patients** the benefits include:

1. improved reliability of service – through fewer inappropriate tests, fewer lost results, fewer duplicated tests and less chance of the wrong samples being taken
2. faster results – especially those that could not previously be sent electronically

At the start of case study four (January 2009) 30% of their GP practices were not using the OCS system. This had caused various operational problems at North Trust, as they have to maintain two systems in parallel, the paper system and the OCS electronic system. Therefore some of the key intended benefits had not been realised.

### **3.6.3 Interpreting the Data – The OCS Project**

Thirteen members of staff from the Hospital, the PCT and the GP practices were interviewed. Their profiles are discussed below and summarised in Table 23. The staff interviewed from the GP practices were not fully aware of the issues relating to the planning and the management of the project, but were familiar with the system, its benefits, its support etc. This explains some of the gaps in their answers. The interviewees are listed below:

- A. Head of IT
- B. Practice Nurse
- C. Practice Nurse
- D. Phlebotomy Service Manager and system trainer
- E. GP
- F. GP

- G. Pathology IT Manager
- H. GP
- I. Practice Manager
- J. Pathology Service Manager
- K. Director of Performance (PCT)
- L. GP
- M. Practice Manager

The Head of IT (A) was the lead IT member of staff and provided strategic technical planning. He was not involved in the project from its inception, but took over following the departure of the Director of IM&T a few months after the start of the project. He was not a user of the system and not a member of the pathology department that was leading this project. He was very critical of the planning and the initial implementation. He described the implementation as system/technology focused with little attention paid to change and process redesign.

The Practice Nurse (B) at a GP surgery was a heavy user of the system and the practice referred to her as their expert user. She used the system to access the results and request new tests on line. She used the system in two ways: during the consultation with the patients and away from the patients when she was reviewing some of the tests. She liked the system and felt it was very beneficial to the practice and the patients.

The Practice Nurse (C) at a GP surgery was a heavy user of the system and comfortable using it on daily basis. She used the system to access the results and request new tests on line. She made the test requests on behalf of the GPs, who mainly used the system to view the results rather than request new tests. She liked the system and believed it had delivered many benefits to the practice and the patients.

The Phlebotomy Service Manager also was the System Trainer (D). At the time of the study she was not a user of the system as the hospital had not yet implemented OCS internally. She was seconded as a part-time trainer for the GP surgeries, following many complaints about the lack of training and the training materials. She was an expert user of the system. Her team was heavily impacted by this system and that was one of the reasons she was seconded to the project.

GP (E) was a regular user of the system to view the test results on line. He did not request the tests, as this was normally delegated to the nursing staff in his practice. He liked the system and believed it had delivered many benefits to his practice and his patients.

GP (F) was a heavy user of the system. He used it to request tests and view results. He was aware of the system's benefits and believed their surgery had realised many of these benefits.

The Pathology IT Manager (G) was not a user of the system but provided the daily technical support and the maintenance. He was a system expert and was responsible for the provision of training to GP surgery staff at the early stages of the project. He

believed that the system was very good and the implementation was 100% successful. He had a system and technology focus with little regard to change and process redesign.

GP (H) was a heavy user of the system and believed the system was good. However he also believed that there were several limitations to the system. If these were removed he thought the system would be very beneficial.

The Practice Manager (I) was an occasional user of the system and used it for administrative and not clinical purposes, such as the production of reports for costing and accounting. She believed the system was very beneficial, reliable and well supported. She believed the clinicians she worked with found it useful from a clinical perspective and she found it useful from an administrative perspective.

The Pathology Service Manager (J) was an occasional user of the system for administrative and management purposes. He understood and believed in the benefits of the technology to the hospital and the GP practices. He believed the project was managed very badly for a long time as there was no proper planning, no adequate resources, no proper project management and no training or marketing. In his opinion, the project leadership was not stable or senior enough for most of the project implementation. He believed the project improved after they secured training and some project management resource. He stated that hospital and the GP surgeries were, to a large extent, still running dual systems, paper and electronic, hence not realising the full benefits from the technology.

The Director of Performance (K) at the PCT and previously the Director of IM&T at Norrh Trust was a senior executive and not a user of the system. He believed that the PCT played a passive role in the project, did not see it as a priority but agreed to provide some funding for the project. He believed the project was successful within the hospital but he was not sure of its success beyond the hospital boundaries. He believed that a considerable amount of planning around change benefits had taken place to support this project, which was a view not shared by many of the interviewees.

Following the interviews with the above participants it was recognised that further interviews were needed from practices that do not use the system. Two telephone interviews were undertaken from two practices in this category. The first was with a GP (L) and the second was with a Practice Manager (M). The senior partner from the first practice refused to implement the system until he received reimbursement for an additional cost that his practice would incur if they implemented the system. This additional cost was only £30 per year but no one had tried to resolve this problem and help the practice to implement the system.

The second practice would like to implement the OCS system; however, their primary care computer system did not interface with the OCS system. Again, no one from the PCT or the project team took ownership of this problem and worked with the supplier and the practice to get it resolved.

**Table 23 Interviewees' profiles for the OCS project**

Interviewee	Role	Comments	Use of the
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			<b>system</b>
A	Head of IT	A senior manager who was involved at the early stages of the project and was responsible for the technical strategic planning and some aspects of the project management.	Not a user
B	Practice Nurse	A Practice Nurse at a GP surgery in the North area. The system had directly impacted her daily job and ways of doing things. She liked and used the system.	Heavy user
C	Practice Nurse	A Practice Nurse at a GP surgery in the North area. The system had directly impacted her daily job and ways of doing things. She liked and used the system.	Heavy user
D	Phlebotomy Service Manager and the system trainer.	A middle grade manager. Her area and team were heavily impacted by the system. She was not a professional trainer. Nevertheless, she was seconded to this role because of her communication skills and close working arrangement with the system.	Heavy user
E	General Practitioner	A senior GP who liked the system and believed that his practice was realising the benefits of the system.	Regular user
F	General Practitioner	A senior GP who liked the system and believed that his practice was realising the benefits of the system.	Regular user
G	Pathology IT manager	A junior manager, system expert, provided daily technical support and maintenance to the system. He believed the project was 100% successful.	Not a user
H	General Practitioner	Liked and used the system but believed there were some limitations associated with OCS.	Regular User
I	Practice Manager	Liked the system and used it mainly for administrative purposes. She believed the system had been very useful for the practice.	Occasional user
J	Pathology Service Manager	Believed in the benefits from the system to the hospital and the GP practices. Believed the project was not managed effectively for a long time, but more recently it had improved following the allocation of extra resources and learning's from the initial implementation.	Occasional user
K	Director of Performance / PCT	Believed the project had a limited success. The PCT did not see the project as a priority and their representation on the project was through junior members of staff. He believed the project was important to the delivery of care to patients but needed to be integrated with, and part of, a wider information technology strategy	Not a User
L	GP	A senior partner at a GP practice that used a well recognised primary care computer system. He believed in the benefits of the	Not a User



		system, but opposed the use of the system until he received reimbursement for the additional cost associated with the project.	
M	Practice Manager for GP surgery	She and the GPs in the practice would have liked to use the system but, due to some technical problems that have not been resolved, the practice was unable to implement the OCS.	Not a User

NVIVO was used as a tool to aid the data analysis through an effective data reduction technique. The outcome of the data reduction from NVIVO is illustrated in figure 21. NVIVO illustrated the data in a hierarchical structure, through the use of parent-child relationships. It also aided the researcher to explain, by using the coded data, the causes of particular phenomena.

For example one of the factors that was recognised as having a negative impact on the project outcome was the power and influence, or the lack of it, that was demonstrated by stakeholders. In NVIVO this was represented by a direct connection between the negative factors circle and the stakeholders' power and influence circle, indicating that this was a negative factor, and that the negative factor circle is the parent and the stakeholder power and influence was the child. There were two reasons for this that were identified by the interviewees. First, the PCT did not use their power and influence over the GPs to convince them to use the system in a standard way and stop using the old system. Second, the hospital had no power or influence over the GPs. These two reasons were illustrated in the NVIVO outcome shown in figure 19, and shown as having a parent-child relationship to the stakeholder power and influence.

### **Theme One – Investment Decision and Business case**

The Pathology Service Manager and the former Director of IM&T were involved in making the investment decision; however the Head of IT, the System Trainer and the Pathology IT Manager were aware of it. The PCT was also involved, but played a passive role in the project. This was due to a number of reasons. First, the PCT IT services were outsourced to the hospital IT department; therefore the PCT viewed the implementation of the project as part of the hospital contractual commitment. Second, the PCT did not see this project as a priority for them. Third, the PCT did not initially understand the full impact/benefits of the project. Finally, the hospital believed that the role of the PCT was limited and might be confined to funding of the project.

The former Director of IM&T said, *“The role of North PCT was at that point passive. They were passengers and later became active as they realised some of the implications of it.”* The Head of IT indicated that the PCT were only involved from the commissioning side and for financial support, but nothing else. He said the PCT saw the order communication project as *“something between the GP practice, the patient and the hospital. Obviously what they were doing is saying ‘Well we are the commissioners and we are paying for the service,’ so they did not feel it was their responsibility to do that.”* The system trainer said, *“I am not sure how much the PCT*

*got involved with it other than paying for the licences and actually saying, 'Yes, this is a good thing and we need to encourage our GPs to use this system.'*"

The GP practices also confirmed the finding that the PCT played a very limited role in this project. GP (F) and the Practice Nurse (C), believed the PCT's role was confined to funding the cost of the project.

The main drivers for the business case were service improvement and the ability of the pathology department to deal with the increasing workload. The Head of IT, said that, *"The main driver behind it is what they were noticing, or what become apparent to them was that the number of tests that they were doing was escalating by 15% every year and in the physical footprint, with the current process, they simply did not have enough stations to be able to manage the workflow with the current technology. The other drivers were around patient safety and reduction of cost – they were secondary to the main aim, which was to allow the pathology service to offer more at a cheaper cost."*

It is clear from the above that the project was hospital-led and shaped by the pathology services with support and input from the IM&T department. This explains the lack of awareness and involvement from the GP practices in the investment decision and the business case areas.

## **Theme Two – Project Structure**

In this theme a number of questions were discussed, including involvement and awareness of the project structure, and the role of clinicians and IT in leading this project. These areas were examined to gain a deeper understanding of those involved in the management structure, their roles within it and the leadership of the project.

There was a good level of involvement and awareness of the project structure at the hospital side. This is due to the fact that the hospital has led the project through the IM&T and the pathology departments. Furthermore the hospital understood that a new technology was needed urgently to help them manage their increased workload and reduce their cost (Order Communications Business case, 2007). The level of involvement and awareness at the GP practices was poor. One GP from the pilot site and one junior manager from the PCT were involved in the project structure and the rest of the project board members were from the hospital. Despite the involvement of one GP and a representative from the PCT, the GP practices were not aware of the project structure, or its aims and objectives, until they were contacted by the hospital to ask them to install the OC software in their practices.

Those that were involved in the project structure include the Head of IT, the Pathology IT Manager, the Pathology Service Manager and the Director of IM&T. In addition, the system trainer was aware of it.

The Pathology IT Manager said, *"The project was managed at top level by the director of IM&T. We also had on the board a representative from the PCT, myself, a GP, a hospital consultant, a fair mix of people."* The Head of IT said, *"There was a*

*very flat project team that consisted of essentially Pathology and IT, because it was seen very much as a service-driven, if we create the tool and the service and take it out, GPs will suddenly pick it up and start using it.”*

It was clear that the project was, at least in the earlier stages, hospital focused, and little attention was given to the wider rollout to the GP practices. This explains the lack of awareness and involvement from the GP practices.

### **Theme Three – Implementation**

The answers relating to the effectiveness of the implementation were not conclusive as half of the interviewees that answered the questions believed the implementation approach was effective and the other half did not. In general the hospital staff, with the exception of the former Director of IM&T, believed that the implementation approach was not good, while interviewees from the GP practices believed the implementation was good.

The hospital staff believed the planning of the implementation, the rollout of the system to GP practices and the resourcing of the project were not effective. All the hospital interviewees agreed that the implementation was done in phases.

The pathology service manager said, *“It was not a very well organised project, to be honest. It was more or less get on with it, and it’s been done piecemeal and we have been left abandoned ... I think our order communications project is a classic of how not to do it.”*

The Head of IT indicated that the implementation was managed by an IT person, the Pathology IT manager, and this led to various problems. He said, *“It was very much system-centric, and the background of the person managing the project is around IT system configuration and not around project management, so the project was not led by a professional project manager or someone that was trained in project management methodologies, and I think that led to some issues around the clarity. Perhaps we would have identified some of the problems that we encountered earlier than we did.”*

On the practices’ side, the views were different as the interviewees were expressing the experience at their practice rather than across the entire project. As far as they were concerned the hospital explained what the project was about, installed the system, trained their staff and provided ongoing support. Therefore they were generally happy with that approach. However what was missing from the GP practices’ implementations, which will be explored later in this section, was change management, process redesign and clear direction for the way forward regarding the use of the system.

All the interviewees, with the exception of one Practice Nurse who was not able to comment, and the Pathology Service Manager, believed that system support was available. Although the Pathology Service Manager believed that there was a dedicated support and training service in place for the GP practices, he stated that this was not the case at the earlier stages of the project and there was still lack of support to the process redesign.

The Practice Nurse (B) said that, *“The hospital team was always at the end of the telephone if we’d got any problems.”* The second practice Nurse (C) said *“The hospital team is very supportive, yes, and even afterwards if we’d got a problem we would just ring them and they’d come back to talk you through, or over the phone.”*

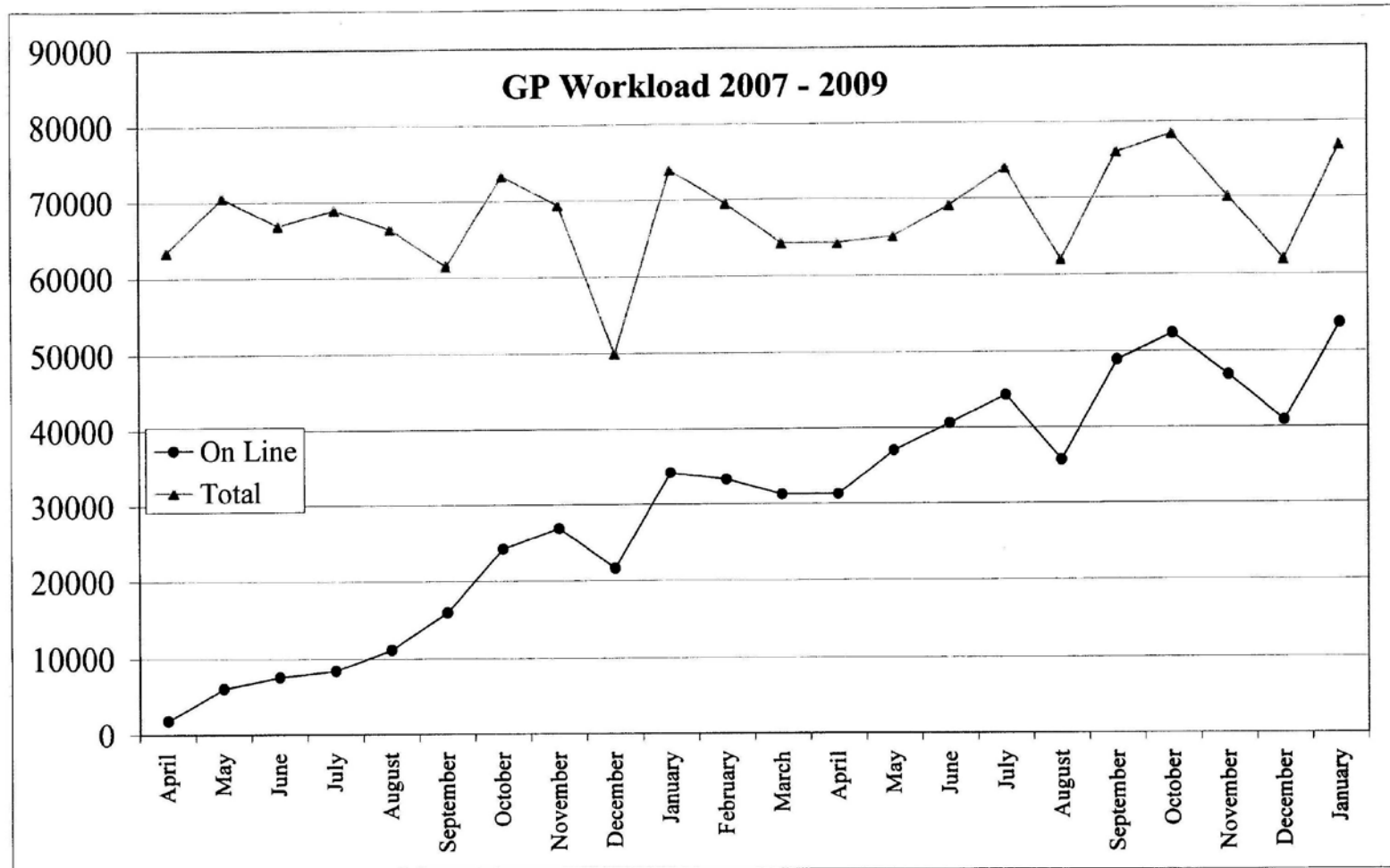
All the interviewees that answered the questions relating to the categorisation of the system as an administrative, clinical or both believed the system offered both clinical and administrative functionalities. This is consistent with the system functional specification as described earlier. Those that answered the questions in this section included the two Practice Nurses, the System Trainer, the Pathology Service Manager and the former Director of IM&T.

#### **Theme Four – The role of the clinicians**

All the interviewees believed that clinicians were using the system at the time of the study but the majority believed that there was a strong initial clinicians’ resistance to the project. One of the Practice Nurses did not answer this question and the three GPs that were interviewed believed there was no clinicians’ resistance currently. The Head of IT described the reasons for the initial resistance from GP practices by saying, *“At first the GPs did not understand what this was. They had heard stories about other systems that their colleagues had used in other areas that didn’t work very well, that they ended up wasting a lot of time learning a new system that didn’t work, so they went back to the old one. So let’s save the effort and just keep the old one, so there was resistance to change.”* The System Trainer explained, *“There were some practices that weren’t keen, that didn’t respond, so after we’d got those on that were happy, I then did a lot of leg work chasing them and trying to explain the situation, going out, showing them the system, trying to use my power of persuasion to get them on board.”*

The majority of the interviewees believed that clinicians were still resisting the use of the system. They include the Head of IT, the two Practice Nurses, the System Trainer, the Pathology IT Manager, a Practice Manager and the Pathology Service Manager. This view is supported by the GP system usage report that was provided by the hospital in February 2009 and included in figure 20. Those who believed that there was no clinicians’ resistance at the time of this study included three GPs. One Practice Nurse believed that the GPs did not use the system consistently and described their use as *“opportunistic”*. Another Practice Nurse that works with those GPs said, *“My understanding is not every doctor uses the system.”* Her reason for this was *“stubbornness of doctors, or could be computer skills”*. However all the interviewees believed that clinicians were engaged and involved in this project.

**Figure 20** The use of the OCS system by GP practices, indicated in terms of the number of the electronic requests for pathology services



It is clear from the interviewees' comments that there was initial clinician resistance, and that this had been reduced following the successful rollout of the system to some practices. The earlier stages of the project paid little attention to the marketing of the product to GP practices. There was one person, the pathology IT manager, who was managing, marketing and training GP practices. By the admission of the head of IT and the pathology service manager, this person was IT focused and did not have project management skills. This resulted in poor marketing of the project and led to the project been system-centric.

There was a lack of awareness of GP practices' processes and ways of working. There was an assumption on the hospital side that all practices worked in the same way. This is not the case, as practices ranged from small single-handed practices to large multi-site practices that offered a wide range of healthcare services. That lack of awareness led to poor marketing of the product and eventually resistance from practices; furthermore, the hospital underestimated the resources required to roll out the system to all the GP practices successfully.

### **Theme Five – Communications**

A Practice Nurse, the pathology IT Manager and two GPs believed the communication was sufficient. However the Head of IT, the System Trainer and the Pathology Service manager did not. Therefore the answers were not conclusive. However the majority of the interviewees believed that a variety of communication methods were used.

A practice Nurse said, *"We had emails saying that the system was going to change ... the hospital team went through it all when they came and did our training."* The Pathology IT Manager said, *"Prior to the project we sent out basically a letter to each GP and each GP practice manager, telling them what we were going to do and asking anybody who was interested to contact us... I have built up a mailing list so anything we do I will email that group of people."*

There was sufficient evidence that suggested different methods of communication were used, and GP practices in general felt there was sufficient communication about the project. However some of the hospital staff believed that more should have been done on communication. The Pathology Service Manager, who ended up leading the project, believed the project lacked a good communication lead. He said, *"Even with the pilot ones it was a struggle for us to get the communication going. That was why I picked the new system trainer, because she's got the communication skills"*

It was clear that different ways of communication were required with GP practices, to reduce the initial resistance and to ensure those practices that had the system were using it fully. Communication that was based on a good understanding of practices' ways of working, their needs and requirements and the benefits of using the system was lacking. There was also some confusion about the role of the hospital and the PCT in communicating with GP practices. Normal NHS protocol suggests that the PCT should communicate with the practices directly and that the hospital should go

through the PCT when putting out key messages to GPs. However it was clear that in this project the PCT was not an active player and had limited interest. Having said that, the GP practices had low expectations from the project and they were content with the communication received.

### **Theme Six – Training**

All GP practice staff believed that training was provided and was sufficient; however the majority of the hospital staff believed that training was not sufficient: the Head of IT, the System Trainer, the Pathology IT Manager and the Pathology Service Manager.

Practice Nurse (C), said, *“We had training from the Pathology IT Manager and the System Trainer, they came down and showed us what to do and left us for a while, made sure that we are working alright but always at the end of the telephone if we’d got any problems.”* GP (H), said, *“The lab staff came and provided training. It’s very simple and mostly it’s no problem.”* The Practice Manager said, *“All staff received the training. They came from North Trust here and did it in house.”*

The Head of IT explained that the project and the hospital underestimated the training requirements. He said, *“We thought there was going to be a little bit of training but it wouldn’t be of any consequence, half an hour, we can show someone how to use this tool and it’s so intuitive that people will just immediately pick it up and start using it. Obviously that did not turn out to be the case.”*

There was clear evidence that the project initially did not have a dedicated training resource. The departure of the project sponsor, together with the absence of a dedicated training resource, negatively impacted the rollout of the project. The appointment of a dedicated trainer with apparently good communication skills at a later stage of the project had improved the pace of the rollout of the project to GP practices.

There was a consensus that short, flexible and informal training was preferred to the formal and long training sessions. Four interviewees believed that training for newcomers was available: they were a Practice Nurse, a GP, a Practice Manager and the System Trainer. The Head of IT did not believe this to be the case.

The Pathology System Manager indicated that the PCT did initially commit to providing training sessions to GP practices but they did not fulfil this commitment and left it all to the hospital to do.

### **Theme Seven – Benefit Realisation**

All the interviewees were aware of the benefits. The Head of IT described the benefits by saying that, *“The most important one was around the management of risk in terms of the electronic systems are inherently safer than the manual ones. It would reduce duplication, and it would allow better communication from GP to hospital because the GP would eventually be able to see the tests that were taking place in the hospital.”* Practice Nurse (C), said, *“The results seem to come back quicker, less*

*paperwork and pen writing.” GP (F) said, “We won’t be able to miss a blood test because a patient can say he forgotten the forms or anything, but if you do it in the computer, the patients know the request has gone.” GP (H) was forthright in his assertion that, “The biggest advantage I think we have is we can link on the Lablink and see the result.” The Pathology Service Manager indicated that, “GP surgeries will not be wasting time filling request cards out; it’s two clicks of a button and press accept, the order is made. The other key benefit to practices is the reporting side because they will be able to, without having to phone up and say can you see if my patient’s had any lithiums done, any MOCs done, all this information is available on the system and they can access it. Another benefit to the practices is not repeating stuff that does not need repeating, it will actually say, when you say I want a B12, a message box will bob up saying you have had a B12 in the last week.”*

All the interviewees apart from the Head of IT believed that benefits were routinely realised. There is clear evidence to support this finding: the GPs system usage report showed that thousands of requests were coming in electronically to the lab; the fact that practice staff were accessing the system and checking the results, and the reduction in staff at the pathology department as a result of the introduction of the system, were all supporting evidence of the system benefits in practice.

There was also clear evidence that suggested many intended benefits had not been fully realised. For example the majority of the results were still being printed by the hospital and mailed to practices, even though practices were accessing and viewing the results on line. This was the result of lack of clear policy and communication with GP practices across the community, which normally would have been led by the PCT. However the PCT role in this project had been passive, as indicated earlier. The Pathology Service Manager explained the current duplicate paper/electronic system that existed for most of the practices: *“I do not know why they insist on the paper copy, but I think next we might have to be a bit more forceful and say it’s just a total waste, it adds no value at all. So theoretically their side from administrative, clerical functions could be significantly reduced if they accepted the fact that electronic in and electronic out, you do not need any paper. It can’t go wrong. So that another push we need to do with it.”*

The dual running of the paper and the electronic system two years after the initial implementation confirms that there are some significant benefits and efficiency savings still to be made. This also represents a key reason why this project was less than successful.

The majority of the interviewees believed that there was no formal benefit plan in place; however the Pathology IT Manager, the Pathology Service Manager and the former Director of IM&T believed that there was a plan in place. One GP and a Practice Manager did not answer this question.

The evidence of the existence of a formal benefit plan is weak. The only benefit plan that the researcher had access to was a brief description of the benefits, and some quantified financial benefits that would result from the reduction of junior staff at the pathology department, which was included in the initial business case. The project also



used a list of benefits for the patients and the GP practices that were produced by the NPfIT but did not validate their relevance to this project and its context.

The majority of the interviewees believed that no benefit realisation audit had taken place. However the Pathology IT Manager and the Pathology Service Manager believed one had taken place. However, when questioned further on the evidence they referred to the realisation of the financial/cost cutting benefits that was demonstrated by the reduction of the total head counts at the pathology department. No audit or measurements were undertaken to measure the benefits to patients or to clinicians.

All the interviewees with the exception of the Practice Manager, who did not answer, believed that there were clear benefits from the implementation of the system to the managers and the clinicians. This result reinforces the fact that the system offers both clinical and administrative functionalities and, if used correctly, can benefit both groups of staff.

In summary, the area of benefits management has been poorly managed. There was a focus on reductions in staff numbers at the pathology department, with little attention given to the benefits to other stakeholders. There were no benefits identified for the PCT, which could explain their reluctance to play an active role in this project.

### **Theme Eight – Change management**

The majority of the interviewees indicated that changes in working practices have taken place as a result of the implementation of the system. The head of IT and a Practice nurse believed such changes did not take place, and another Practice Nurse (B) and a GP did not answer this question.

The majority of the interviewees believed that change was not well planned or executed; however the former Director of IM&T had the opposite view. Two GPs and one practice nurse did not answer this question.

Only two interviewees answered the question about co-ordination with other change initiatives, and their views were negative. The other interviewees did not answer this question because they did not know or were not aware of other initiatives that were going on.

Finally on this theme the majority of the interviewees indicated that they were involved in the change process relating to the implementation of the system. Two interviewees were not involved, the Head of IT and one GP.

The former Director of IM&T strongly believed that change and process redesign was done comprehensively, well planned and executed. He said, "*Internally the benefit mapping stuff within the pathology team and the wider hospital was quite extensive. We'd certainly got a lot of the business change stuff, we'd got a lot of the financial consequences of that as well. On the primary care side it was more applied, in the sense that the description of what the service would look like, and I know we had the people from the supplier going out with the hospital staff, they would begin to describe*

*the process, and then the practice itself went through a process of redesigning some of the mechanism around the requesting service, and then how the bottles would be collected and how they would be labelled and the label would be linked back and they worked that one through and in effect provided a bit of a template for the rest of the organisation that followed afterward.”*

The Pathology Service Manager gave somewhat mixed signals in relation to change and process redesign. He said, *“Within the pathology there isn’t a lot of change, it’s simple. We knew that there is not a lot to be done in terms of mapping the new process because you are still sitting down with a request form, but instead of putting that information in, you just go ‘bip’ on the barcode and it fetches the information in, and you just say yeah that is the right patient, accept. That is the only different process.”*

However he also said, *“We are in the process of redesigning reception. This is where we are struggling with the change management side of the process in reception, and we actually asked Siemens, who are our prime supplier, to support us with this.”*

The Practice Manager said in relation to the management of change and the new process, *“Well, it just sort of uncovered itself as we went.”*

The Pathology IT Manager’s description of the management of change and the process redesign was closely related to the technology and the equipment. The Pathology IT Manager indicated that the team responsible for the implementation would do their best to avoid changing the practices’ processes as result of the introduction of the system. He said, *“As part of the implementation with the new practices we spoke to them and asked how they managed phlebotomy, where they blood their patients, whether or not there was a workstation and a printer there... We went through the process and made sure they’d got things actually positioned in the right places and that this wasn’t going to compromise their process in any way. There have had to be little changes in process but nothing major.”*

There was clear lack of understanding of what change is and what process redesign is, and the author had to explain these areas in many different ways to some practice staff before they could give any answers. In general there was some clear evidence that new processes have been introduced as a result of the introduction of the technology. There was also some evidence that process design planning had taken place, but that was limited. However the planning and execution of the change was poor and it seems that the hospital staff were afraid to change or suggest any major changes at the practices.

### **Theme Nine – Project Success**

The majority of the interviewees indicated that they would not like to go back to the old system that was in place prior to the implementation of the order communication system. Practice Nurse (C) indicated that she would not mind going back to the old system as she believed that mistakes could still be made with the new system by

entering the wrong information. The System Trainer and the Pathology IT Manager did not answer this question.

All practice staff that had the system implemented at their practices believed that the project was successful. However the hospital staff believed that the project was a failure during the first year but improved considerably after that. The former Director of IM&T was not able to answer the question due to his change of role.

Although the above results point to a very successful project, the reality is different, particularly where further explanations were given by the interviewees. The project was considerably behind time (double the expected and planned time) and most practices were still running paper and electronic systems, in some cases two years after they went live, thus limiting the realisation of the intended benefits. These factors indicate that the project is not as successful as it should be.

Practice staff in general were happy with the system and all of them believed the system was successful, even though they were still running the paper system in parallel. This generally can be explained by the fact that the system was simple and reliable, and practices had low expectations to start with. However all the hospital staff have qualified their positive answers in relation to success.

The head of IT said, *“I would say that it’s a success, but the benefits have not been measured so it’s very difficult to say we have finally achieved this and we have reduced this risk and we have improved efficiency.”*

The system trainer said, in response to the questions relating to project success *“It still has its problems. I think a lot of the problems are there ... and the failures are because of we do not have control over the GPs. We can not make them do it, and we can not make them use it.”*

The Pathology Service Manager described the project success differently in two different stages of the project lifecycle. He said, *“I would say in the first year it was very, very disappointing and felt like a failure in terms of a project. It just was not going anywhere. We put a lot of hard work into getting the system to work and then it just died and was going nowhere, so it did feel like a total failed project. So the two halves over the two years, first year, total disaster, and the second year a real success.”*

It was clear that during the first 12 months the project did not have sufficient resources, was internally focused and lacked the required understanding of the processes within GP practices. It was also clear, as shown by the GP system usage report that the pace of the rollout and the utilisation of the system improved during the second year. Having said that, there were still some considerable failures relating to the lack of a clear direction on the future use of the system and the dual running of the paper and electronic systems. These problems were exacerbated by the lack of active support from the PCT. At the time of this study there were still a number of practices that were refusing to implement the system, mainly due to lack of support from the PCT and the project to resolve some operational problems such as technical or financial issues.

## **Theme Ten – Stakeholder Management**

The Head of IT, the System Trainer, the Pathology IT Manager, the Pathology Service Manager and the former Director of IM&T were able to identify and were aware of the key stakeholders of this project but the rest of the interviewees were not able to identify all the key stakeholders. Generally the interviewees believed the key stakeholders were the hospital, the PCT and the GP practices.

All the hospital staff with the exception of the Pathology Service Manager believed the customer supplier relationship was good and effective. This could be due to the fact that the supplier is the leader in the marketplace with a mature and reliable technology. The practice staff did not have direct access to the system supplier and therefore were not able to comment. The same interviewees also believed that the manager/clinician relationship was improved as a result of this system implementation. At practice level generally the manager/clinician relationship was not an issue, mainly because they work very closely in a small workplace. Furthermore they did not have a direct relationship with the system supplier. All the hospital staff, a GP and the PCT's Director of Performance believed this project had negatively impacted the relationship between the hospital and the PCT and in a few cases has negatively impacted the relationship with those practices that were refusing to use the system. This was mainly due to the fact that the hospital believed the PCT should have played a greater role and used their power to influence the GPs to use the system.

All the interviewees were able to identify benefits to individual stakeholders; however they all failed to identify any direct benefits to the PCT. This was further confirmed by the benefits list in the business case and the benefit list that was identified by NHS Connecting for Health. This may explain the PCT's lack of interest in the project.

All the interviewees with the exception of the former Director of IM&T at the hospital, who is the current Director of Performance at the PCT, believed that the PCT did not play an effective roll in this project. They believed the PCT should have shown and exercised leadership when dealing with GPs, as the hospital had little influence over the GPs in comparison to the PCT. The former director of IM&T believed the PCT did eventually get on board and sent a senior representative to the project.

All the interviewees with the exceptions of a Practice Nurse and a GP believed that stakeholders' attitudes and behaviours were positive and supportive of the project, with the exception of the PCT which played a passive role. The GP community had had a positive attitude and behaviour towards the project.

There were a minority group of GPs that either objected to the use of the system or did not implement it. Two practices in this category were contacted by the author in order to understand their reasons for not implementing the system. The first practice confirmed through their Practice Manager that they did want to implement the system but they could not do so for technical reasons. Their GP system supplier had not developed the required interface to the OCS, and the suppliers had failed to meet many delivery dates for such an interface. The practice also felt that the PCT or the hospital

should be putting pressure on the supplier to deliver the interface. The second practice confirmed through their Practice Manager that the senior GP at the practice refused to implement the system until the PCT or the hospital reimbursed the new cost associated with printing the bar codes that needed to go on the test samples. This cost was estimated by the hospital Pathology IT Manager to be around £30 per year per practice. It appeared that little effort had been made to resolve these outstanding issues.

There was generally a lack of direction and guidance to GP practices on the use of the system, which resulted in GP practices using the electronic and the paper system in parallel. All the hospital staff and the former director of IM&T believed such behaviours and attitudes had negatively impacted the realisation of the identified benefits.

The great majority of the interviewees believed that the stakeholders' interests were not managed effectively or reconciled. This was apparent in the absence of direct benefits to the PCT, and the reluctance of some GPs to use the system due to some basic operational issues. The practices that were not using the system explained that their interests were not managed effectively and they were not supported in resolving some minor problems that prevented them from implementing the system.

In summary this project was generally positively received by the GP community but, due to lack of direction and proper planning, struggled to get full commitment from the stakeholders. Therefore some stakeholders exhibited behaviours and attitudes that did not help achieve the required outcome. Finally there was a lack of clarity on the role the PCT should play, which proved very costly to the project as the PCT was the one player that could directly influence the GP practices. Therefore the PCT power and influence was underestimated and misunderstood.

### **Theme Eleven – Leadership**

On the leadership questions, the hospital staff were clear that this project was management led through IT and closely supported by the pathology department through the Pathology Service Manager. The project was led by the Director of IM&T at the earlier stages, and then the Pathology Service Manager had to lead the project, supported by his IT system manager, following the departure of the Director of IM&T. The practice staff were not able to answer questions relating to the project leadership due to the reasons given earlier.

All the hospital staff believed that the initial project leader was a senior executive who was credible and respected across the organisation. However following his departure to take a post as the Director of Performance and Information at the PCT, the project lacked leadership for several months and lost its momentum. The Pathology Service Manager had little choice but to provide project leadership as his department was hugely impacted by this project. During the early stages of the project the Trust experienced changes of many of its executive team and this was an unsettling period for the whole organisation. The Pathology Service Manager said, *“There is no proper support structure; that is been the problem with the order communications one, because probably our executive sponsor left and we never really filled the gap again, and it is been a bit of a mess since to be honest.”* The Pathology Service Manager was a middle-

grade manager in the hospital with little power and influence beyond the boundaries of the Pathology department

The Pathology Service Manager focused on getting his team in the hospital to use the system and he managed to work with his team to redesign the old processes to realise the required benefits. Eventually he realised the financial saving and the reduction in staff. The Pathology IT manager was left to manage the project at the GP practices. He led an IT focused implementation, with little regard to process redesign or change management. The Head of IT said, *“The Pathology IT System Manager was very much system-centric, obviously his background is around IT system configuration and not around project management.”* The Pathology Service Manager said, *“Every single practice you have to treat differently because they all have different ways of working, and that’s what we just couldn’t get our heads round...The IT System Manager can do his technical bits, he’s not got the skills to go ahead and sell it, to sell the idea of how fantastic it’ll be and what benefits it would have, and get them all on board and keep them on board.”* This could explain why many GP practices were still using the electronic and the paper systems, hence impacting the benefits realisation.

The middle and the junior managers in the hospital and at the GP practices played a positive role in using, and encouraging their colleague to use, the system. The main users of the system at the practice level were the nurses, but the GP practices did not properly consider the best ways of implementing the system. Therefore there were no clear policies or procedures that everyone adhered to. However on the hospital side the Pathology and Phlebotomy team engaged in the process redesign work and had a clear policy and procedures on the use of the system. The Phlebotomy Manager/System Trainer said *“I know within Phlebotomy we’ve worked closely with Pathology as a team anyway, to workout what effect the project is going to have on our services.”*

Finally the PCT did not play a lead role in designing policies and procedures for GP practise, but left it to the hospital to work with them. However the hospital did not have a direct relationship with the GP practices and had limited influence over them in comparison to the PCT, therefore the GPs were free to use the system the way they wanted to or refuse the use of the system all together.

In summary, the project started with a senior and credible leader, however following his departure the project lacked leadership and was system driven. The hospital failed to get the PCT to fully support the project; hence the lack of leadership and direction to GP practices in relation to the utilisation of the system, which limited the realisation of benefits.

### **3.6.4 Summary of the OCS Project**

This project underachieved: it failed to realise many of the potential benefits and it over ran considerably. However there were some successes too. There were clear benefits to all the stakeholders. However those relating to the PCT were not identified. The clinicians and the managers at the hospital and at the GP practices believed in the benefits offered by the system, and that helped to get them engaged and using the system. The technology was mature and provided by a leading supplier in the field,

which led to the implementation of a reliable system that did not cause operational difficulties to the organisations involved.

The system was implemented within the hospital and across the great majority of GP practices. The financial benefits that related to staff reduction were achieved and communication and training were improved during the latter stages of the project.

The key problems that limited the success of this project were:

- Inadequate attention to the engagement and management of a powerful and influential stakeholder - the PCT
- The hospital lacked influence over the GP surgeries and was powerless to stop them using the paper system in parallel with the electronic one
- Lack of effective leadership or an experienced project manager
- Limited understanding and management of change in the key processes at GP practices
- Little if any attention to benefits planning and benefits management





## **3.7 Cross Case Synthesis**

### **3.7.1 Introduction**

Organisations three and four are both general hospital trusts in Yorkshire, serving populations of around 250,000 each. Neither trust had a single integrated patient record; instead they had various clinical systems in place to support the delivery of care to patients. Both organisations experienced significant changes in the leadership of the organisation during the implementation of the projects under study.

Both of the implemented systems were selected by the individual organisations, and locally led and managed, without input from the Department of Health or the CfH. The technology used in both systems was mature and used by other organisations across the NHS.

Both projects are considered to be less successful than those in case studies one and two. In case study three the consultants now resent and do not use the system, and the main users are the managers and the nurses. In case study four, despite the implementation of the system at the majority of GP practices, these are still running the old paper system in parallel with the electronic one.

There are many potential benefits that have not yet been realised that made these projects less successful. The findings from both of the projects are analysed according to the themes that were used in the data collection. These themes were combined to aid the data analysis and the comparison between the two projects.

### **3.7.2 Investment and Project Structure**

In both organisations the number of people involved in the decision making and the business case development was low. Furthermore, the level of awareness of the investment decisions was moderate but the level of awareness of the business case was low. In the Theatre project the investment decision and the development of the business case was driven by a national target to improve theatre throughput and capacity. Delivering this target was the responsibility of the Director of Performance and Information, who made the key decisions and shared them with few others that were involved in the project management structure. However the Clinical Director for the theatre services should have been a key decision maker in this project and not just a director from the management side. In the OCS project the investment decision and the development of the business case was driven by the Director of IM&T who similarly shared this information with very few others that were involved in the project. Neither investment decision was controversial, as such systems are widely used across the NHS. This may explain the reason for the lack of involvement and consultation in the decision making process.

The business cases for both projects were weak and did not contain sufficient details to identify and allocate sufficient resources for both projects. Furthermore, the

business cases lacked clear focus on the benefits that were required to justify the investment and drive the necessary change in existing processes.

The business case for the Theatre system focused on the functional specification of the system and listed various expected benefits, without the required details on the management and the realisation of these benefits. The business case did not identify the key stakeholders and their interests and did not identify the required resources to manage the project. For example there was no dedicated training or communication resource.

The business case for the OCS project was brief, with a focus on the cost of the project. The benefits that were listed in the business case were pulled out from a national web site, and no benefits were identified for one of the key stakeholders, the PCT. Similarly, as in the Theatre project business case, they did not identify or plan to make available training or a communication resource. There were no details about the management of the required change in either business case.

The development of a business case requires special knowledge and skills as it is a complex business and technical document. Evidence from case study three (North East staff survey 2009) suggested that many staff lacked the experience of developing a comprehensive business case. This may explain the lack of involvement in developing the business cases.

In both organisations the level of involvement of stakeholders in the project management structure was low; in particular the level of representation from the GP practices in the OCS study was low, as the project was internally focused on the hospital and the internal stakeholders. The level of awareness of the project management structure for the Theatre project was high, but it was moderate for the OCS project. This could be due to the fact that the majority of the stakeholders for the Theatre project were internal, but the opposite was true for the OCS project. Furthermore, the initial focus of the OCS project was on the hospital, and the GP practices were ignored to a large extent. The level of awareness of the projects, their objectives and benefits could be improved through effective communication. Projects that are implemented across multiple organisations require extra effort to keep all stakeholders informed and aware. However communication for projects that are implemented within one department or one organisation could improve relatively easily, as they would have other means to achieve this, including the use of general staff briefings, discussion with colleagues, etc.

Both projects had formal project boards and project or implementation teams; however, in the OCS implementation the wider stakeholders were not sufficiently involved in the project and its management. For example, the OCS project board and team did not involve any representatives from Practice Nurses, Practice Managers or practice administrative staff. In the Theatre implementation there was wider stakeholder representation, but key stakeholders (consultants) were not involved in making key project decisions. This could have led to the poor management of the IT enabled change, poor commitment from stakeholders and the lack of benefits realisation.

### **3.7.3 Implementation Approach**

The implementation approach of the Theatre system was criticised severely by the consultants, mainly due to the fact that it was focused on implementing the administrative functionality of the system rather than the clinical. The focus on the administrative part of the system demonstrated that the system was management led and was focused on meeting national efficiency targets. The implementation approach of the OCS received a mixed response from the key stakeholders. Internal stakeholders within the hospital were critical of the implementation due to the lack of leadership, poor understanding of the requirement at GP practices and poor resourcing. However the GP practices believed that the implementation was good. This could be due to their low expectation of the project or due to the fact that they had the system implemented and they could use it in the way that they wanted.

Both system implementations were prolonged and took much longer than expected. For example the OCS implementation was still ongoing a year after its planned completion, and although the Theatre system implementation was officially completed there were still to date many outstanding areas where no final project sign off had taken place. This could explain the lack of success and benefits realisation associated with these projects.

The implementation of the core theatre system was undertaken across all the theatres in a big bang approach, then over a prolonged period of time expanded to other areas such as day cases (i.e. operations are completed, and patients are discharged within a day) . The implementation of the OCS was done in more defined stages; following the approval of the business case the system was implemented first at the hospital, then in larger GP practices, and finally in the smaller GP practices. The hospital assumed that all practices worked in the same way and that the earlier implementation model they devised for the larger practices would apply to all practices. This assumption proved to be totally wrong, as smaller practices did not have the capacity, the skills or the expertise that larger practices had. Furthermore their processes and ways of working were different. This slowed the pace of implementation and led to the poor management of the required process redesign at GP practices. However both systems were believed to be stable, reliable and properly supported.

In summary, the implementation approach was not well planned or executed in either project.

### **3.7.4 Clinical Engagement**

In the theatre system there was good clinical engagement and involvement in the early stages of the project; however this changed after the realisation that the system implementation would focus on the administrative functionality rather than the clinical. Therefore the consultants in particular resisted the use of the system as they felt it did not meet their requirements and did not support their day-to-day needs. They also felt their views, expressed at the earlier stages of the project, were ignored by the

management. The consultants' resistance to the use of the system negatively impacted the realisation of the potential benefits of the system.

The system was also used by the management team to performance manage the consultants (e.g. managers could monitor and assess how long the consultants were taking to perform certain operations, how many operations were carried out by individual consultants etc., against benchmarked data). This made the consultants resent and have a deep-seated dislike of the system, which made them unwilling to use the system even though more clinical functionality has been implemented recently.

In the OCS implementation the level of involvement and engagement of clinicians was good, and initial and ongoing resistance was low. This could be due to the fact that the system offered both clinical and administrative functionality and benefits. The clinicians could also see clear benefits to their patients from the use of the system. However the lack of planning and the lack of understanding of the way GP practices worked, limited the realisation of benefits. Better marketing of the benefits to clinicians could have improved the pace of GP uptake of the system. The clinical involvement and engagement could have been further enhanced if small operational problems had been managed more effectively. For example the request from some GP practices to be reimbursed for a small cost (£30 per practice) associated with the project would have resulted in more GPs using and embracing the system.

In summary, there was clearly a failure in managing the clinicians and their interests in the theatre project, and failure to resolve some basic operational problems that were raised by clinicians in the OCS project.

### **3.7.5 Communication and Training**

In the implementation of the Theatre project communication was poor. There was no dedicated communication lead or regular communication with stakeholders. This could be due to the project team assuming that staff would get to know about the project from their colleagues or the relevant departments that were directly involved in the project, as the project was internally focused within the organisation. In the OCS project, communication was slightly more effective; the majority believed that variety of communication methods were used during the project. The OCS project had many external stakeholders and the hospital had limited influence over them; therefore they had to try hard to keep them informed about the project and its potential. Neither project had a clinical lead or champion that was responsible for communicating with their colleagues, and certainly in both projects communication could have been managed more effectively. This could have impacted the outcome of both projects.

With regard to the theatre system implementation the interviewees were very critical about the initial lack of training and the lack of any training to new staff. This has meant that even consultants who might have considered using the system have stopped using or attempting to use the system. In the OCS implementation there were mixed views. The practice staff believed that sufficient training was provided and that refresher training was available on request from the hospital. However the hospital staff

believed that for many months training was neither effective nor sufficient. This was due to the fact that the project did not have a dedicated training resource. Although a dedicated trainer was in place later on in the project, the lack of a dedicated training resource from the start had slowed the project down and impacted the overall timescale for completion.

Interviewees from both projects believed that informal and short training sessions were more effective than formal dedicated training sessions. Training and communication were not managed effectively, and as a result both projects were negatively impacted.

### **3.7.6 Benefits Management**

There was a good level of awareness of the benefits across both case studies, even though these benefits were not defined explicitly by the organisations, but taken out from documents about the benefits that could be delivered. In the Theatre project, the managers generally believed the benefits were routinely realised, as they felt that they were able to improve the throughput and the capacity of the theatres by using the management information produced by the system. However the consultants did not believe benefits were realised as the system did not impact their daily work or their patients. This view stems from the fact that the system did not offer them the required clinical functionality. In the OCS project the majority believed that the benefits were routinely realised. This view was based on the fact that hospital staff were using the new system to manage the pathology requests and results, which has resulted in increased throughput and reduction in cost. Similarly the majority of GP practices were using the system and the clinicians and their patients were benefiting from the fast access to results and the reduction in unnecessary test requests.

In reality the hospital did not achieve all the required financial savings due to the practices continuing to use the old system in parallel with the new one. Furthermore the hospital continued to send paper copies of the results by post, even though the practices were receiving them electronically. The benefits realisation could have been drastically improved if the hospital has more influence over the GPs or if the PCT had played an active role in the project by setting out clear policy to GP practices on the use of the system. Similarly the realisation of the benefits from the theatre system could have been improved if the existing clinical functionality within the system had been implemented and the consultants' interests effectively managed.

The majority across both case studies believed that there was no formal benefit plan and no formal audit or assessments of benefit realisation had taken place. The majority in both cases believed that the projects offered benefits to managers; however only the interviewees of the OCS project believed that the system offered benefits to clinicians too.

In summary, in both cases the organisations have failed to realise many of the intended benefits. This was due to various factors such as poor identification of

benefits, poor management of stakeholders and their interests, poor management of change and the lack of a structured benefits management approach.

### **3.7.7 Change Management**

In the theatre project the managers believed changes in working practices had taken place but the consultants did not agree. This is again because the consultants did not use the system but the managers and some of the nurses did, for the same reasons given before. However the changes that the managers were referring to were related to the use of the electronic system to record patient flow and produce management reports instead of doing these activities manually. Therefore the changes they were referring to were confined to the use of the technology rather than across the patient journey. In the OCS project the majority believed that changes in working practices did take place. This is true for the hospital side but at the GP practices, even though they have introduced new ways of doing things, they have largely continued to use the old ways as well.

In both projects the majority believed that the changes were not well planned or well executed, and that more could have been done to manage the change more effectively. In the theatre project the majority believed that the management of change was not well co-ordinated with other change initiatives at the time, despite the fact that many other initiatives were taking place at these organisations. One example of such an initiative is the implementation of Choose and Book, which has many links to the OCS project.

In the theatre project the users were generally split in to the usual two groups, consultants and managers. The consultants indicated that they did not get involved in the change process, but the managers and some of the nurses who were using the system did. In the OCS project the majority believed they were involved in the change process and there was evidence of this on the hospital side that resulted in designing new processes in the Pathology and Phlebotomy departments. However the change process at the GP practices was superficial, as those who were managing and responsible for the implementation of the project lacked the understanding of how the practices work. GP practices lacked the skills and expertise to manage change or redesign processes. The poor management of change has limited the success of the projects and the potential benefits that have been realised.

### **3.7.8 Stakeholder Management**

Ineffective stakeholder management was recognised as one of the top two mistakes that impacted project outcome and led to project failure, (Nelson, 2007). In the theatre project the majority of interviewees were able to identify the stakeholders of the project. However there was a mixed response from the OCS project; about half of the interviewees were able to identify the stakeholders. This may be because the OCS project had various external stakeholders and was implemented across organisations, unlike the theatre project, which was implemented within one organisation.

In the theatre project most of the consultants and some of the nurses believed that the project had negatively impacted the relationship between the managers and the consultants, because the system was used to monitor and performance manage the consultants, and did not offer the consultants any tangible benefits. The relationship between the organisation and the supplier was also difficult: the ownership of the system had changed several times since the project commenced, making it difficult to establish good understanding of the project and a stable relationship.

In the OCS project the majority believed the project had negatively impacted the relationship between the hospital and the PCT, due to the lack of active involvement of the PCT in the project. Furthermore, the relationships between the practices that refused to use the system and the hospital and between those practices and the PCT were strained. This was due to the fact that the hospital did not provide the necessary support around process redesign and change management, and that the hospital was getting frustrated with the practices that were refusing to use the system and thus limiting the benefits that could be realised. The relationship between those practices and the PCT was strained as no funding was provided by the PCT to reimburse the practices for some of the small additional costs incurred due to the implementation of the project.

The benefits to all stakeholders had not been fully identified in either project. In the Theatre project the consultants resisted the use of the system as there were no clear benefits to them. In the OCS project there were no benefits identified for the PCT, and this could explain their reluctance to be actively involved in the project. There was a lack of recognition of the fact that stakeholders would resist or would not be genuinely engaged if there was nothing for them in the new project or the initiative.

In the theatre project the initial attitudes and the behaviours of the stakeholders were positive; however the consultants' attitudes and behaviours changed once they realised that the clinical functionality would not be implemented and the system would be used to performance manage them. In the OCS project the attitude and the behaviour of the PCT was negative from the start; this could be due to the reasons given earlier.

The impact of the stakeholders' influence and power were demonstrated in both projects. In the theatre project the management group used their power and influence to ensure that the project focus was on serving the managers' interests and that the system would deliver the required management tools to help them undertake their daily jobs more effectively. On the other hand, the consultant body demonstrated their power by refusing to use the system despite the requests from the management team. This clearly demonstrates that stakeholder interests were not managed effectively and that this led to a lack of benefits realisation.

In the OCS project, the PCT did not exercise their influence and power over the GPs to get them to use the system in accordance with a clear policy. This could be due to the fact that their interest in the project was not recognised and there were no clear benefits to them from the project. It could also be because this project was not part of any national target that the PCT had to deliver on, and therefore they did not see it as a priority for them. The power of the GPs as independent contractors was demonstrated

by the refusal of some practices to implement or use the system. On the other hand, this project demonstrated the hospital's lack of power and influence over GP practices, as they were not able to get all the GP practices to use the system or get the majority to stop using the old system.

In both projects there was poor management of stakeholders and their interests, and poor understanding of the power and influence some stakeholders may have over the project outcome. Even though most of the findings from both projects are in line with the findings from the literature, there was definitive difference. The new finding from both projects is that the project management team may manage the interests of all the stakeholders but one, and this could still severely impact the project outcome. For example the OCS management team managed the interests of the clinicians and managers in both the Pathology and Phlebotomy departments and to a large extent the interests of various GP practices. However, due to their failure in managing the PCT interest, and due to their lack of understanding of their power, influence and the role they could play in the project, the project struggled to realise many of its intended benefits.

### **3.7.9 Leadership**

Both organisations experienced a period of significant organisational change at the senior management level during the life of the projects. Both projects were led by managers rather than clinicians. In the theatre system implementation, the project had a stable project leadership, but the leader was described as not very credible: system and technology focused rather than people focused. In the OCS project, the project leadership changed during the life of the project from an initial senior and credible leader to middle-manager with less credibility across the organisation. The OCS project in particular required a senior credible leader not only within the hospital but also across the stakeholder organisations, in order to influence and facilitate key discussions between internal and external stakeholders.

The project managers of both projects had no project management experience or training in a recognised project management methodology. The lack of credible leadership and experienced project managers seems to have had impacted both projects negatively.

In both projects the project leadership had limited power over key stakeholders. In the theatre project the project leader was a manager who lacked the required understanding of the consultants' requirements and their needs. Managers usually have limited influence over the powerful consultant group; therefore it was inevitable that the consultants would be resentful of the new system. Furthermore, the focus of the management team and the project leader was on using the system for management information and for monitoring consultants' performance. This has naturally increased the level of resentment to the project and its leadership.

In the OCS project, following the early departure of the project leader there was a leadership vacuum that led to loss of momentum and slowed the pace of implementation. As a last resort, and in order to rescue the project and help his



department deliver on key organisational performance targets, the Pathology Service Manager stepped into the role of project leader. Due to his lack of leadership skills and credibility the project became internally focussed and failed to pay sufficient attention to external stakeholders such as the GP practices and the PCT. This resulted in a technology-focused implementation with little attention given to process redesign and change management at GP practices. Furthermore, there was no attention given to, or sufficient engagement from, a key stakeholder, the PCT.

It seems clear that the lack of project leadership with the required traits has negatively impacted the projects' outcomes.

### **3.7.10 Summary**

Through the cross case synthesis number of common factors have emerged that contributed to the underachievement of these projects. Furthermore, the differences in these projects were clearly highlighted. The content of this chapter aided the development of the discussion and the conclusion in the next chapter.

## **3.8 Discussion and Conclusions**

### **3.8.1 Introduction**

The findings from case studies three and four were summarised under each theme that was used within the interviews, as shown in table 24 below.

**Table 24 Summary of the two case studies**

<b>Summary of the findings – Theatre</b>	<b>Summary of the findings – OCS</b>
<p><b>Business Case (BC), Investment Decision (ID) and Project Structure (PS)</b></p> <p>Involvement in the decision making and the BC development was low. Awareness of the ID was moderate, but low for the BC. The technology was mature and selected by the organisation.</p> <p>The ID and the BC were led by management through the Director of Performance and Information.</p> <p>Involvement in the project management structure was low but awareness of it was high. The high level of awareness could be down to the fact that the majority of the stakeholders were internal and confined within few departments.</p> <p>The project manager did not have project management experience or knowledge of a project management methodology.</p>	<p><b>Business Case (BC), Investment Decision (ID) and Project Structure (PS)</b></p> <p>Involvement in the decision making and the BC development was low. Awareness of the ID was moderate, but low for the BC. The technology was mature and selected by the organisation.</p> <p>The ID and the BC were led by management through the Director of IM&amp;T.</p> <p>Involvement in the PS was low but awareness of it was moderate. The lower level of awareness of the PS in comparison to the theatre project could be down to the fact that many of the project stakeholders were external and communications could be more challenging. The hospital recognised this at a later stage and tried to rectify it through the recruitment of a dedicated trainer, who was also responsible for raising awareness amongst GP practices.</p> <p>The project manager did not have project management experience or knowledge of a project management methodology.</p>
<p><b>The implementation Approach</b></p> <p>The implementation of the system took much longer than expected. The system was implemented with a big bang approach across the theatres, and then it was very slowly rolled out to other departments.</p> <p>The implementation was heavily criticised by the consultants due to the implementation of the administrative functionality of the system only.</p> <p>The system was described as reliable and well supported.</p>	<p><b>The implementation Approach</b></p> <p>The implementation of the system took much longer than planned and was staged, starting with the hospital, then the large GP practices and finally the smaller GP practices.</p> <p>The implementation was criticised by the hospital due to the lack of focus on change management and clear policies for the GP surgeries. However the GP practices were happy with the implementation.</p> <p>The system was described as reliable and well supported.</p>
<p><b>The role of clinicians</b></p> <p>Initially there was good level of clinical engagement and involvement in the project. However, after the realisation that the system would mainly be used for administrative and management purposes, the consultants resisted the system and its use.</p>	<p><b>The role of clinicians</b></p> <p>Overall there was good level of clinical engagement and involvement. There was limited initial and ongoing resistance and the resistance was mainly due to financial or technical issues rather than to the use of the system or the lack of belief in the benefits it would deliver.</p>

<p>Many of the nurses continued to use and support the system as they needed to use the administrative part of the system to manage patient flow.</p>	<p>The GP use of the system is not systematic or consistent due to lack of policies and, in some cases, computer skills.</p> <p>The majority of clinical and non clinical staff liked the system, used it and actively endorsed it.</p>
<p style="text-align: center;"><b>Communication &amp; Training</b></p> <p>Communication between the project board and the staff and the organisations that were impacted by the projects was poor and there was no dedicated communication resource.</p> <p>There was no dedicated training resource and the lack of training was heavily criticised by the interviewees.</p>	<p style="text-align: center;"><b>Communication &amp; Training</b></p> <p>Communication between the project board and the staff in the organisations that were impacted by the projects was slightly more effective than in the Theatre project. There was no dedicated communication resource, but at the later stages of the project the System Trainer was charged to raise awareness and improve communication with GP practices.</p> <p>There was no dedicated training resource at the early stages of the project, but after realising the increasing demand for training from GP practice staff, the hospital invested in a dedicated trainer.</p> <p>The majority of the interviewees were happy with the initial and ongoing training provided on the system.</p>
<p style="text-align: center;"><b>Benefits Realisation</b></p> <p>There was good level of awareness of the benefits. In general the managers believed that the benefits were realised routinely but the clinicians did not agree: the consultants believed that there were no benefits for them from the system.</p> <p>There was no formal benefit plan and no benefit audit had taken place.</p> <p>The reality is that many potential benefits have not been realised due to the lack of consultants' engagement.</p>	<p style="text-align: center;"><b>Benefits Realisation</b></p> <p>There was a good level of awareness of benefits and the majority believed that the benefits were routinely realised. There was no formal plan and no formal audit apart from a limited assessment of the financial saving at the pathology department.</p> <p>Both managers and clinicians believed the system offered them a set of benefits.</p> <p>The reality is that many potential benefits have not been realised due to the lack of policy for GP practices on the use of the system, which resulted from the lack of engagement of a key stakeholder, the PCT.</p>
<p style="text-align: center;"><b>Change Management</b></p> <p>The management and the execution of the change were poor and there was lack of coordination with other change initiatives. The consultants did not believe that changes in working practices took place but the managers did.</p>	<p style="text-align: center;"><b>Change Management</b></p> <p>The management and the execution of the change were poor and there was lack of coordination with other change initiatives.</p> <p>The majority believed that changes in working practices had taken place and there</p>

<p>There was no evidence of process redesign or changes in working practices.</p>	<p>was evidence of these changes at the hospital. However there was no evidence to suggest changes in working practices had taken place at GP practices. This was due to the lack of understanding of the processes at GP practices and the lack of skills in managing change.</p>
<p style="text-align: center;"><b>Management of Stakeholders</b></p> <p>The majority of the interviewees were able to identify the project stakeholders. The majority believed the project had negatively impacted the clinician manager relationship. Furthermore, the relationship between the organisation and the system supplier was difficult due to the constant changes in the system owners.</p> <p>The initial attitude and behaviour of the stakeholders were positive and supportive. However the attitude and behaviour of the consultants changed to the opposite after their realisation that the system would be focused on administrative and management functionality.</p> <p>The consultants exercised their power by refusing to use the system and the managers felt powerless to change this.</p>	<p style="text-align: center;"><b>Management of Stakeholders</b></p> <p>Approximately half of the interviewees were able to identify the project stakeholders. This could be due to the fact that there were more external stakeholders in comparison to the theatre project.</p> <p>The project has negatively impacted various stakeholder relationships. The relationship between the hospital and the PCT suffered due to the fact that the PCT did not play an active role in this project. The relationship between some of the GP practices, (those that refused to use the system on one side and the hospital and the PCT on the other side), have suffered too.</p> <p>The attitude and behaviour of the PCT was negative towards the project from the start and they did not exercise their power to influence the GP practices to use the system.</p> <p>The hospital had no power or influence over the GP practices and was unable to ensure that all GP practices used the new electronic system and stopped using the old paper system.</p>
<p style="text-align: center;"><b>Leadership</b></p> <p>The organisation experienced significant organisational change during the life of the project.</p> <p>The project was management led, with a focus on the technology rather than the change and the people.</p> <p>The project leader was not very credible and had little influence over the consultant group.</p> <p>The project manager had no skills in, or experience of managing projects.</p>	<p style="text-align: center;"><b>Leadership</b></p> <p>The organisation experienced significant organisational change during the life of the project.</p> <p>The project was management led, and the leadership of the project changed early on in the project life cycle.</p> <p>The eventual leader was not credible and had no influence on external stakeholders.</p> <p>The project manager did not have the skills or the knowledge of managing projects.</p>

Both the theatre and the OCS projects were less successful than the PACS implementations in case studies one and two. Both projects failed to realise many of the intended benefits, underestimated the required resources and overran considerably.

The key reasons for the lack of success of these projects were analysed using a thematic approach. However in this chapter the findings were discussed in the context of existing literature, and conclusions were drawn using the key models that were discussed from that literature. In particular the following models were used to conclude these two case studies:

1. Project factors: developed in project one
2. Success models: Nelson (2005) and DeLone and McLean (2003)
3. Stakeholder models: Ward, Heminway and Daniel. (2005), Boonstra, Boddy and Bell (2008), and Eden and Ackermann (1998)

### 3.8.2 Project Factors

The project factors model, table 25, was developed in project one and has been used here to provide a framework for discussing the findings.

**Table 25 Project factors model**

<b>Pre-Project Factors</b>	<b>Project Factors</b>	<b>Post-Project Factors</b>
Investment decision involvement & awareness	Effectiveness of the implementation approach	Changes in working practices
Business case involvement & awareness	Communication sufficiency & variety	Benefits realisation
Initial clinician resistance	Training sufficiency & delivery method	Benefits realisation audit
Clinician engagement & involvement	Project structure awareness & involvement	Ongoing clinician resistance
Awareness of benefits	Awareness of benefits	Clinician use of the system
Manager-clinician relationship	The use of a formal benefits plan	Users not reverting to the old system
Stakeholder analysis & interests	Execution of change	
Planning of change	Customer-supplier relationship	
	The use of an experienced project Manager	
	Project leadership	
	Co-ordination with other change initiatives	

The above factors were deemed important to project outcome and were considered in relation to the reviewed literature in the order of the themes structure that was used to present the data.

Few business cases for IT investments are able to accurately identify all the expected benefits from those investments and many organisations do not demand rigorous evidence to justify the level of required investment (Ward, Daniel & Peppard, 2008). This was the case for both projects, as both business cases were weak, resulting in the allocation of inadequate resources and inadequate focus on change management,

benefit management and, in the theatre project, lack of clear project objectives. The Cabinet Office Report (2000) and McAfee (2006) provide evidence that the business case and the initial investment decision have a significant impact on a project's outcomes. This was demonstrated in these projects as the poor business cases for the theatre and the OCS projects were one of the key causes of their underachievement.

The reviewed literature in project one suggested that the management of complex change should not be assigned to a single group. (Markus and Benjamin, 1997; Remenyi, 1999). Therefore wider stakeholder involvement in project management should take place to secure active input. However in the theatre project the wider consultants' group were not involved and in the OCS project, key stakeholders (including practice nurses and practice managers) were not represented. Furthermore, the involvement of the PCT in the OCS project was achieved through a single junior manager, while the rest of the PCT (e.g. PCT staff from the commissioning team and the clinical effectiveness team that were impacted by this project) were not represented or involved.

Rapid implementations are usually more effective (Tushman, Neman, and Romanelli, 1986; and McDonald, 2000) but the implementation of both projects was slow and took considerably longer than planned. This led to loss of momentum and delays in realising key benefits. A staged approach is important to achieving positive outcomes from IT enabled change projects (Markus, Axline, Petrie and Tanis 2000; and Isabella, 1990) however neither of these projects had clearly defined stages, which was also contrary to the NHS mandated project management methodology (PRINCE2).

Clinicians are a powerful group within the NHS, and their resistance to any project would adversely impact its outcome (Pettigrew, McKee and Ferlie, 1988; NAO, 2006; Hendy, Reeves, Fulop, Hutchings and Masseria, 2005). This was clearly confirmed in the Theatre project, as the consultants refused to use the system, which impacted the realisation of the intended benefits. The manager/clinician relationship is usually strained in the NHS (Davies, Hodges, and Rundall, 2003; McCartney, Brown, and Bell, 1993). This was demonstrated in the theatre project as the consultants resisted the management approach of focusing on the administrative and ignoring the clinical parts of the project. The tension in the OCS project was mainly between the hospital and the PCT and related to the roles that each played in the project.

Doctors often resist change when they perceive that a new accountability arrangement will threaten their expertise (Armstrong, 1985). This was demonstrated by the level of resentment from the consultants to the theatre system and to the management approach, after they realised that the managers would use the system to performance manage the consultants and their work. However the OCS project did not experience significant resistance from clinicians, as there were clear benefits to them and their patients from the system and the interests of the clinicians were satisfied to a large extent.

Poor communication is one of the areas that has caused problems in implementing NPfIT solutions (Hendy, Reeves, Fulop, Hutchings and Masseria, 2005) and both projects suffered to some extent from limited or ineffective communication. Training is

frequently not done well or is insufficient, as IT training budgets are often inadequate or get cut down due to cost or time pressures (Ward and Daniel, 2006) and this was the case in the theatre project and, to some extent, at the OCS project. Communication and training have, to some extent, impacted the project outcomes; however, these factors were not the most significant in terms of impact.

Both projects suffered, albeit to differing levels, from the poor management of change that negatively impacted the projects' outcomes and the realisation of benefits. This finding is in line with the literature that linked project success and benefit realisation to effective management of change. (NAO, 2006; Benjamin and Levinson, 1993; Manzoni and Angehrn, 1997). For example in the theatre project the management of change was focused on the technical and administrative part of the system and not on the clinical processes. In the OCS project the change process was managed more effectively on the hospital side but less well across GP practices, due to the hospital's lack of understanding of the ways of working at these practices.

Active management of the benefits was lacking in both projects and both have managed to realise only a limited set of benefits from the implementation of the new systems. There was no benefit measurement or benefit audit in place. Both projects lacked a robust benefit plan, developed with input from the stakeholders. Most of the difficulties in realising the benefits stemmed from the lack of clarity at the start about the intended benefits, the ability to track and record these benefits and ultimately deliver them (Peppard and Ward, 2005).

One of the key factors that limited the achievement of both projects was the lack of effective management of stakeholders' interests. The theatre project failed to cater for the consultants and their interests. The OCS project did manage most of the stakeholders more effectively, but failed to manage the PCT's interest, input and their relationship with other stakeholders. This confirmed the finding from the literature that suggests that "The challenge facing those implementing an inter-organisational system is that it is likely to have a radical effect on the external relations between each of the participating organisations and at the same time require internal changes in each" (Boonstra, Boddy and Bell, 2008). Furthermore the project leadership failed to understand the PCT's potential impact on the project and the power and influence they possessed over other stakeholders such as the GP practices. The importance of stakeholder power and influence has been confirmed by the literature (Hales, 2001; Mitchell, 1997; Vogel, 1987; Davis and Thompson, 1994; Corlett, 1989; Ship 1997; Frooman, 1999; Aaltonen Jaakko and Tuomas ,2008)

Project leadership was another factor that affected the outcome of the projects. The absence of leadership or the lack of credible or experienced leadership caused both these projects to underachieve. The literature suggests that credibility is an important attribute of a good leader and can positively impact employees' performance and the level of success achieved (Gabris and Ihrke, 1996; Church 1995, Gabris, Golembiewski and Ihrke, 2001) and that good leadership at the outset is vital for project quality and stakeholder satisfaction (Smith, 1999). The project leaders' lack of attention to the management of stakeholders resulted in key stakeholder groups resisting the use of the system (consultants in the theatre project) or not playing their expected role (the PCT in



the OCS project). This was due to the fact that both project leaders did not have wider business and leadership skills. This was another factor that impacted the projects' outcomes and confirms the findings in the literature that suggest project leaders have to possess wider business skills and that leadership characteristics are important in managing IS projects (Kerzner, 2006; Kloppenborg and Opfer, 2002).

The first problem in both these projects was the failure to manage the pre-project stage effectively. In the theatre project the most important factor was the lack of understanding of the key stakeholders' requirements and interests. Failure to adequately understand and then manage these areas led to the consultants boycotting the project and the system, and strained the manager clinician relationship. The failure of the project leader (who was a manager) to address these problems had increased the mistrust that traditionally exists between the managers and the clinicians. Therefore the failure to manage some of the key pre-project factors meant the project struggled from the start.

The poor quality of the business case was another key reason for the underachievement of this project. The business case did not identify all the necessary resources to implement the system successfully. Furthermore it did not identify the intended benefits, the benefits plan or the stakeholders and their interests. This also led to poor benefits realisation, particularly those benefits relating to changing clinical practice and improving patient care. This in turn led to the consultants' lack of interest in the project and their eventual the boycotting of the system. The lack of a strong and credible leader contributed to the problems in the above areas and caused the project to start off on the wrong footing. Overall, the clinician/manager relationship, the consultants' engagement and involvement, the stakeholder analysis and the understanding of their interests and the development of effective business case were pre-project factors that were not managed effectively.

This mismanagement of the pre-project factors was critical to the outcome of the project. However there was also some poor management of the project and post-project factors, including insufficient training, poor communication and ineffective project implementation, but most of these had their origins in the inadequate attention to resourcing and engagement issues in the pre-project stage.

Similarly in the OCS the pre-project factors were managed poorly. The poor quality business case, the failure to identify the stakeholders and their interests, the absence of strong and credible project leadership and the poor identification of benefits were key pre-project factors that impacted the project outcome. However the project team learned from their earlier failures and changed some of their practices to improve the project outcome, during implementation. For example during the second stage of the project, a new training resource was recruited. Finally a key factor that improved the project outcome was that the benefits offered by the system were clear and directly impacted clinicians and patients, which was not the case in the theatre project.

The other factors that contributed to the lack of achievement of the OCS project were the failure to identify and manage one key stakeholder's interests (the PCT), poor management of the change at GP practices and the lack of benefit management. The

PCT was a very important stakeholder to the project: they held resources and considerable power and influence over the GP practices. The hospital business case did not recognise the role that could be played by the PCT and furthermore the list of benefits that was included in the business case did not identify any benefits for the PCT. Therefore the PCT was reluctant to play an active role in the project, and this led to a lack of policy and direction to shape the use of the system by GP practices.

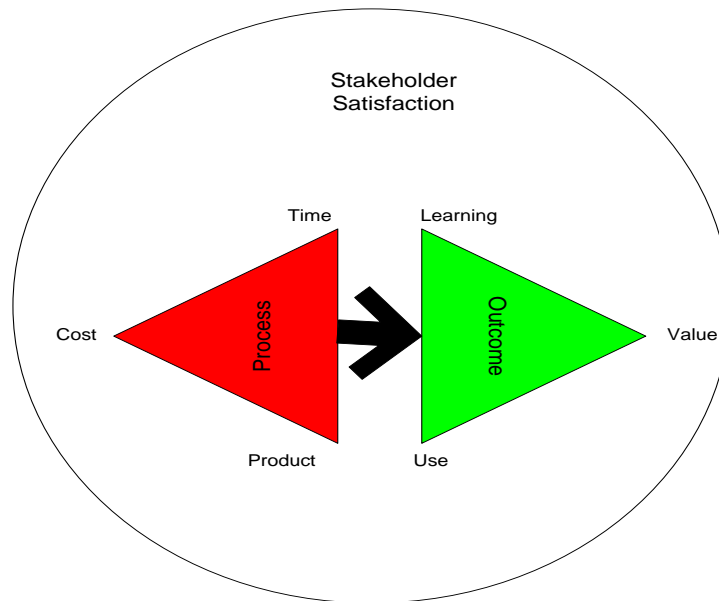
The lack of influence that the hospital had over GP practices and the reluctance of the PCT to play an active role in the project greatly limited the realisation of the potential benefits and the project's success.

### **3.8.3 IS Success Models**

Nelson's (2005), and DeLone and McLean's (2003) IS success models, which were used in project one, have been applied here to explain the findings from the theatre and the OCS projects. Nelson (2005) advocated that different stakeholders have different measures of success, relating to the values stakeholders want to get from the project. (Nelson's model is shown in figure 22) Therefore if the interests and measures of success of the key stakeholders were determined at the outset, ways of managing these diverse stakeholder interests could have been devised. This could have made the consultants commit to the use of the theatre system and the PCT play an active role in the OCS project.

By applying Nelson's (2005) model with its six aspects, to the theatre project, it is clear that that not all of the three aspects of the process stage (cost, product, time) had been met. Cost was not an issue, as the required funding was made available to the project. The product was a mature and an established solution in the field; however its partial implementation, which excluded the clinical functionality from being deployed, caused considerable problems and user dissatisfaction. However this was not a limitation of the product itself but of the product as implemented. It did, however, create the perception for some of the consultants that the product was not fit for purpose. The project did overrun and the implementation time was not managed effectively. Therefore, according to Nelson's (2005) model, two aspects (product and time) of the process stage were not managed effectively.

**Figure 22 Nelson's (2005) success model**



The ineffective management of the process stage led to disappointing outcomes. The three aspects of the outcome stage (use, learning and value) were not satisfactorily met. The consultants boycotted the system and the learning was therefore limited to the administrative processes and the use of information management to improve performance, rather than learning new ways of managing clinical processes or managing patients' pathways differently. This has ultimately limited the value and the benefits that could have been realised from this project.

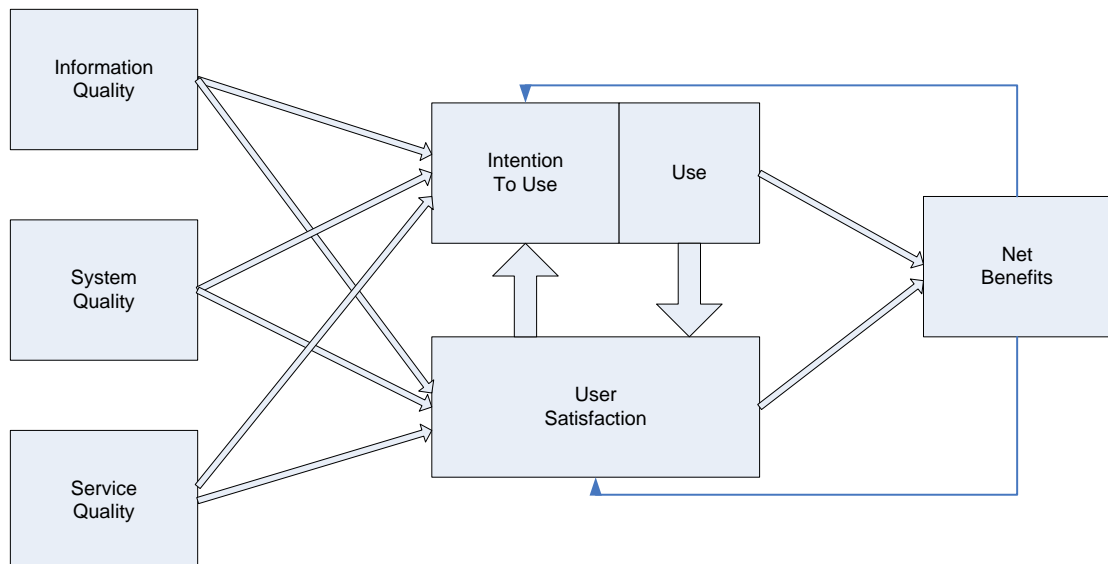
Applying Nelson's (2005) model to the OCS project, it is clear that that two of the three aspects of the process stage were not met. Cost to a large extent was not an issue; however the availability of a small amount of extra funding to reimburse the GP practices could have improved stakeholder relations and system uptake. The product was fit for purpose, mature and a market leader in the field, used successfully by many other organisations. However time was a major issue and the project overran considerably. The main reasons for the project overrun were the reluctance of the PCT to get actively involved in the project so as to provide leadership and influence over the GP practices, and the hospital's lack of knowledge and expertise about the working processes within GP practices and the management of change. This could have been resolved by better management of stakeholders' interests and concerns and effective project leadership.

The outcome stage also faced problems, viewed using the Nelson's (2005) model. Clinicians and administrative staff were using the system, as they believed in its benefits. This was an important positive factor that the project management failed to capitalise on. Clinicians were left to use the old system in tandem with the new system, limiting the realisation of the intended benefits and limiting the project value. There was some good learning from the project on both the administrative and the clinical aspects. For example the system flagged up alerts for tests that should not be ordered because of their relevance or their timing. Furthermore, in using the system the clinicians were routinely assessing what other tests the patients had undergone at the

hospital, and that could aid them in making the appropriate intervention. In both projects, there were aspects of the Nelson's (2005) process stage that had not been managed effectively, such as the time, product implementation, and some funding issues for the OCS project, that in turn led to a poorer outcome stage.

By applying DeLone and McLean's (2003) model (as shown in figure 23) to the theatre project it was clear that the first stage (quality information, quality product and quality service) of the model was not fully satisfied. The quality information criterion of stage one was largely satisfied, as the management information produced by the system was accurate, timely and relevant. However the system did not provide clinical information as the clinical functionality of the system was not implemented. Therefore, as far as the consultants were concerned, the system did not provide them with any useful information; however, the managers and some of the nurses were happy with the management information they obtained from the system.

**Figure 23 DeLone and McLean's (2003) project success model**



The product (Galaxy Theatre System) was a good quality product that was being used by many trusts in the NHS, despite the fact that only a limited part of the available functionality had been implemented at the Trust. Some but not all of the services associated with the system were good. For example there was a responsive and reliable IT support service that kept the system maintained and supported; however there was no training to support the users in learning and using the system. Therefore there were several areas that could have been managed more effectively; these areas were not concerned with the system itself, but rather the way in which the system/project was led or managed, resulting in key stakeholders' interests being ignored or not satisfied.

The consultants initially intended to use the system when they thought the clinical functionality of the system was going to be fully implemented and supported, but once they realised that that was not the case they refused to use it and were

dissatisfied with the system and the way it was implemented. This naturally limited the net benefits that were achieved.

It was not possible to use the DeLone and McLean (2003) model to explain the findings from the OCS project. The OCS provided quality information, the system was of high quality and the support and training were sufficient. The great majority of the users were satisfied with the system and used it. However this did not lead to the realisation of the net benefits. The model does not effectively allow for the impact of the stakeholder management issues and project leadership on the outcome and the net benefits. Furthermore, this project was implemented across organisations with multiple external stakeholders and the DeLone and McLean model does not include these aspects explicitly.

### **3.8.4 Stakeholder models**

Hales (2001) sources of power could have been a useful tool for identifying the stakeholders' sources of power and hence understanding their potential influence over the project. For example, in the OCS project the PCT was not recognised as an important player in this project. However, they possessed three out of the four power sources identified by Hales (2001), which indicates that they should have been identified as a very important and powerful stakeholder. The PCT possesses:

- Coercive power: They have the authority to give instructions to the GP practices.
- Reward Power: They are able to reward the GP practices for achieving targets or implementing policies.
- Administrative power: They have the power to create policies and rules that set the direction for GP practices.

The approaches used to manage both projects, and their limitations, were illustrated and explained using the stakeholder model that was developed by Ward, Hemingway and Daniel (2005), as shown in figure 24 below.

**Figure 24 The application of Wards, Hemingway and Daniel’s (2005) stakeholder model.**

		ES project team’s stakeholder management approach		
		Top-down (power) Those responsible for ES implementation make decision with or without consultation of stakeholders	Coalitions (Interest) ES project team facilitate stakeholders in identifying courses of action that satisfy all of their requirements	Negotiation (Rights) ES project team uses the project plan and other documents to define how change will be implemented and how benefits will be delivered
Information systems rationalities & behaviours	Rational (System rationalism) Stakeholders focus on maximising the organisation’s effectiveness and efficiency			
	Trust (Trust based rationalism) Stakeholders trust each other to work in a way that is mutually beneficial			
	Self-interest (Segmented institutionalism) Stakeholders focus on satisfying their private interests by negotiation with other stakeholders			

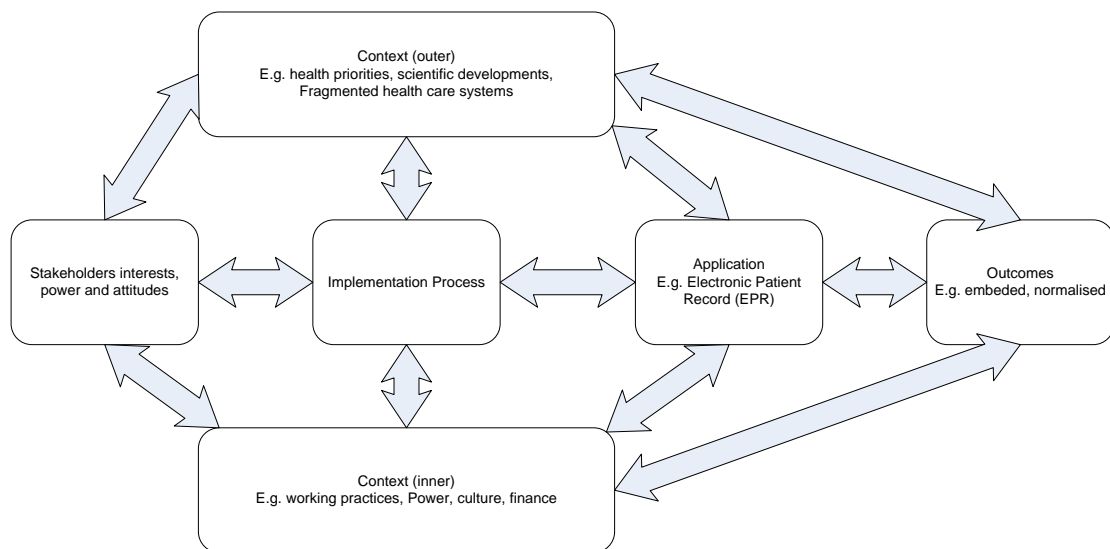
The theatre project started with a top down approach and a rational view of how to address a Department of Health requirement to improve theatre utilisation. However, following this the project moved quickly to the top down/self interest position, without building the required trust amongst the stakeholders, whereby each stakeholder group wanted to focus on satisfying their individual interests. This was due to the level of tension and mistrust that existed between the clinicians and the managers. (This was well documented and highlighted in the 2007 BBC series that was presented by Sir Gerry Robinson, entitled ‘*Can Gerry Robinson Fix the NHS*’, which was made at North East NHS Foundation Trust). Furthermore, the interests of the two groups did not align in this project. The managers wanted to improve efficiency and use the system to performance manage the consultants, while the consultants wanted a clinically rich system that could help them improve the quality of care provided to their patients. This led to one stakeholder group having its interests satisfied (the management) at the expense of the other stakeholder group (the consultants). Finally the project moved into managing the change and the benefits that related only to the management group, without building coalitions or identifying actions to satisfy all stakeholders’ interests. Therefore the limitations of the management approach used in this project were that the project team or the leadership failed to build trust amongst key stakeholders and was not able to build coalitions and actions to satisfy the stakeholders’ interests.

The OCS project also started with a top down/rational approach, informed by the NPfIT rationale and expected benefits from OCS implementation. It then moved into coalition building by identifying and understanding the interest of (some of) the

stakeholders and identifying the necessary steps to satisfy them, with the exception of the PCT. The project then moved into a rational negotiation position to define how change could be implemented and how benefits could be derived. (That was more apparent at the second stage of the project than at the start.) Finally the project moved into detailed negotiations about change and benefits but from the self interest perspective. The limitation of the approach used in the OCS project was that the project team or the leadership did not manage to include the PCT in the coalition and therefore did not build trust between the PCT and the rest of the stakeholders, which resulted in a powerful and influential stakeholder being dissatisfied and not playing a role in the project which would have made important differences to the outcome.

The application of a modified Boonstra, Boddy and Bell (2008) model (figure 25) helped to highlight the reasons for the shortcomings of both the theatre and the OCS projects. The main failings in both projects were associated with the inability to understand and satisfy key stakeholders' interests. Boonstra, Boddy and Bell, (2008) model starts with analysing and understanding stakeholders' interests, powers and attitudes, together with the inner and outer context of the project. These aspects effectively shape the implementation process and determine the application and its perceived benefits that will eventually lead to the required outcome.

**Figure 25 modified Boonstra, Boddy and Bell's (2008) model**



Therefore the application of Boonstra, Boddy and Bell's model (2008) would have led to better understanding of the consultants' requirements, and their power and influence on the Theatre project. Similarly, in the OCS project this model would have helped to identify the PCT as a key stakeholder with significant power and influence, and satisfying their need would have positively impacted on the outcome of the project. However, managing the various stakeholders' interests and ensuring these interests shape the implementation process, the application and eventually the outcome, requires competent project leadership.

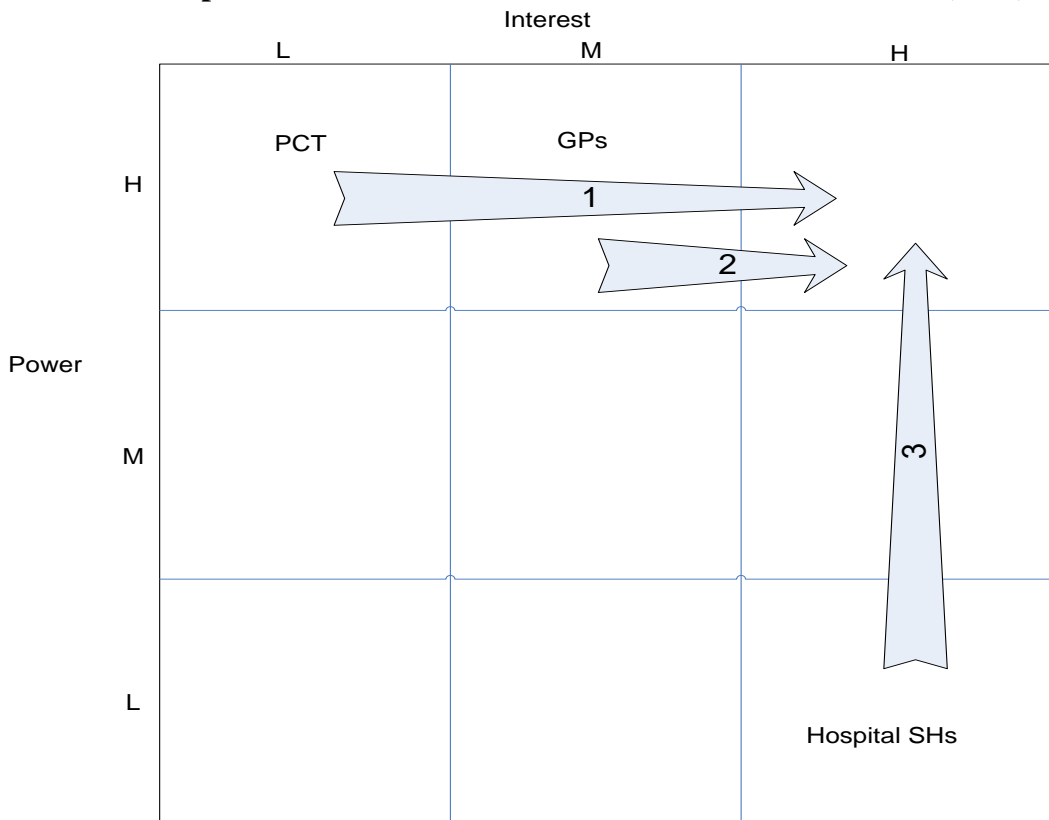
Finally the Eden and Ackermann power interest matrix (1998) have been modified and shown in figure 26. The modified Eden and Ackermann's (1998) matrix could have been used to develop alternative strategies to improve the project outcome. Strategy one (represented by arrow one) would have been to get the PCT to play an active role in the project, set the direction and policy for the use of the system at GP practices. In order to do that, the PCT's interest in the project would need to have been increased. This could have been achieved by ensuring that there were clear benefits to them as a result of the implementation of the project. Such benefits could have included improved commissioning and monitoring of laboratory services that are procured by the PCT from the hospital on behalf of the GPs and financial saving through the reduction of the number of tests procured by the PCT from the hospital on behalf of the GPs. This would be due to the elimination of duplicate or unnecessary requests. Other indirect benefits would have included improving patient safety and patient experience through faster access to results and elimination of repeat tests.

The second strategy (represented by arrow 2 in fig 12.0) would have been to increase the GPs' level of interest in the project, as that would have encouraged them to use the new system consistently and stop using the old system. This could have been achieved by resolving some of the outstanding operational problems, such as the reimbursement for the cost incurred to print some of the forms at the GP practices, or resolving the integration issues between the GP clinical systems and the OCS. Finally the third strategy, represented in arrow 3, would have been to increase the power of the hospital to enable them to have a direct influence over the GPs. This could have been done by mobilising other groups, such as the patients, to influence the PCT and the GP practices to use the system effectively, as this would improve their experience and their care.

In the theatre project one strategy that could have been used to improve the project outcome would have been to increase the consultants' level of interest in the project. This could have been achieved by implementing the clinical functionality that was available within the system and providing adequate training. However this may be difficult to achieve in future as there was a deep-seated dislike of the system within the consultant body at the time of the study, and furthermore the level of trust between the consultants and the management team was low.



**Figure 26 modified power interest matrix based on Eden and Ackermann (1998)**



Finally the use of NVIVO to analyse the data was very helpful in aiding the understanding of the projects' limitations and successes. For example the NVIVO analysis, as illustrated in figure 19, indicated that the reasons for the clinicians' resistance and the increased tension between the managers and the consultants were:

- a. Clinicians' views were ignored
- b. The clinical functionality was not implemented
- c. The system was used to monitor their work.

Furthermore, the NVIVO analysis identified that the cause of the leadership problems was that the project leadership was mainly focused on implementing the technology successfully and was less concerned with, and therefore not effective in, communicating with and managing the interests of project stakeholders. Similarly the use of NVIVO to analyse the data from the OCS project (see figure 21) identified the reason for the passive role played by the PCT and its impact on the project as:

- g. No benefits for the PCT were identified by the project
- h. The PCT's potential role and influence were not understood and were underestimated
- i. The PCT's power of influence over the GP practices was not used

The NVIVO analysis also identified the cause of the leadership problems as related to the fact that the project leader was internally focused and not senior or

experienced enough. The NVIVO analyses have shown more successes associated with the OCS project when compared with the theatre project.

### **3.8.5 Conclusion**

The projects discussed in both these case studies in project two have underachieved, and were less successful than those presented in project one. However the OCS project enjoyed more success and realised more benefits than the Theatre project.

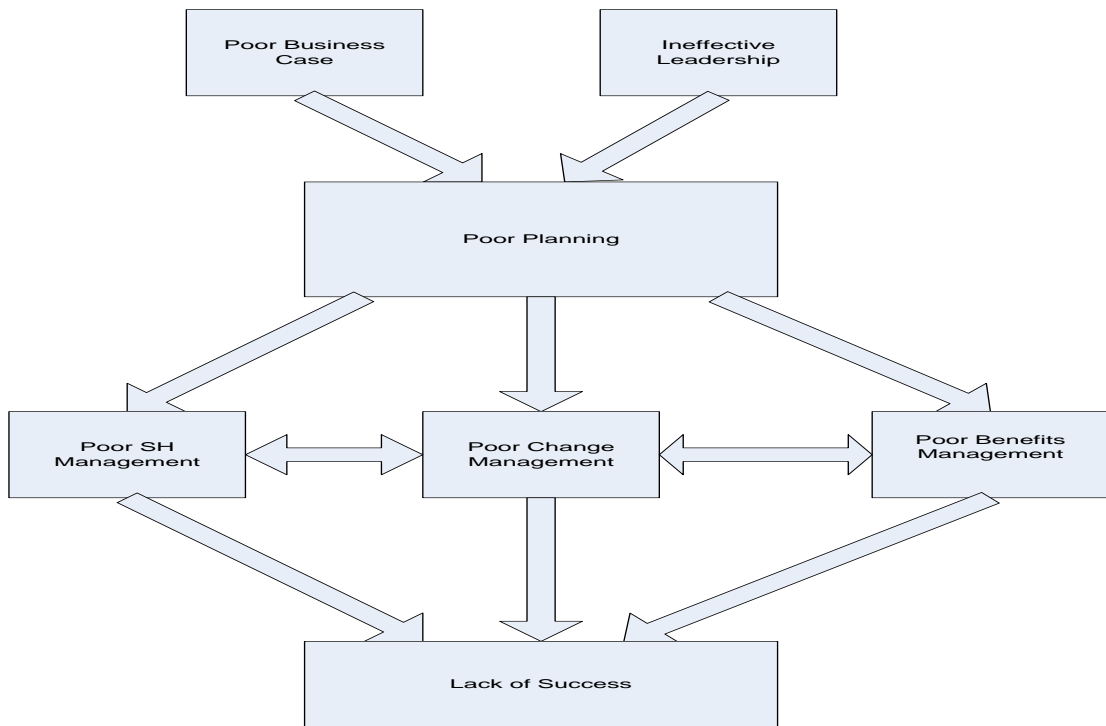
Various models that were discussed in the literature review were used to explain the findings. The application of Nelson's (2005) model was helpful in indicating that value was not realised because neither project managed the process stage effectively, and that in turn impacted the outcome stage and in particular limited the value that could be derived from these projects. DeLone and McLean's (2003) model was useful, to a limited extent, in explaining the findings from the theatre project, but was unable to explain the findings from the OCS project. The reason for this was because this model did not explicitly address the management of stakeholders and their interests across multiple organisations, which was an important factor in this project. Overall both of these models were process driven and did not adequately include the management of change, which is an important enabler to realising benefits and improving the level of success.

The stakeholder models were helpful in explaining the findings from stakeholder perspectives. The use of Ward, Hemingway and Daniel's (2005) stakeholder model and Boonstra, Boddy and Bell's (2008) model indicated that failure to understand and satisfy stakeholders' interests were key factors that negatively impacted the outcome of both projects.

One key finding that was drawn following the application of the various models was that combining a process driven success model, such as DeLone and McLean's, with a stakeholder model, such as Ward, Hemingway and Daniel (2005) could provide a more comprehensive model capable of explaining the findings of these projects and possibly other projects more comprehensively.

A summary of the factors that impacted the outcome of both projects is illustrated in figure 27.

**Figure 27 Flow diagram of the factors that led to projects underachievement**



Poor business cases and ineffective leadership led to inadequate project planning, which in turn led to ineffective management of change, benefits realisation and stakeholder interests, each of which contributed to the eventual lack of success.

Poor business cases have been recognised as key factors that limit project success (Ward, Daniel and Peppard, 2008). The absence of rigour in identifying benefits, justifying the investment and properly assessing the business cases, means that many projects lack clarity about the purpose of the investments and the value such investments would bring to the organisations. Furthermore, poor business cases hinder the management of projects through inaccurate estimation of resources or failure to identify the key stakeholders and their interests. The theatre project had a statement of need which was used as a business case; it lacked the details of the project management resources, training, communication and any statement of how the benefits would be realised and then measured. The business case for OCS project was a few pages long and had many obvious omissions including: full resource requirements, benefits plan, management structure of the project and options assessment.

A key recognition from these two case studies is that poor business cases have a major negative impact on project outcomes and they could determine the fate of the project before it starts. Therefore a robust business case is an important project component and has a significant effect on the success of many projects.

Effective leadership is vital in order to ensure that the projects focus on the important issues (Smith, 1999) and facilitate an effective working relationship between the key stakeholders (Gabris and Ihrke, 2007). Changes in leadership through the lifecycle of the projects could also negatively impact the outcome, as projects often lose momentum and focus. Effective and credible leaders could deal with critical problems effectively, influence stakeholders and keep them engaged, and ensure that projects stay focused on achieving their objectives.

Management of change and benefits are two linked areas that impact project outcomes. However, lack of attention to, and poor management of, these areas had been a theme throughout the two case studies. This was due to the lack of skills in managing change and lack of understanding of the underlying processes. This has often led to the only changes implemented being those which were close to the people/technology interface rather than across the patient journey and care pathway, where significant benefits could also be realised.

The management of benefits was not done well in both projects. However the OCS project was more effective in managing this area than the theatre project. The key finding from analysing the outcome of the benefits management is that, understanding the existing processes and their limitations are critical to identifying and realising the benefits. Furthermore, involving stakeholders in identifying the benefits would improve ownership and commitment to achieving these benefits and changes needed to deliver them (Ward, Daniel and Peppard, 2008). Finally, implementation a system that is closely linked to the daily routines of the clinicians will be better supported and used by clinicians, and hence more benefits will be realised.

The management of stakeholders in the NHS is complex; this is due to the unclear accountability arrangement amongst NHS organisations (Pollitt 1993; Dawson, 1999), lack of trust amongst NHS organisations (this was illustrated through the application of Ward, Hemingway and Daniel's model, 2005) and the historical tension between managers and clinicians (Walsh and Smith, 2006; Baggott, 2004). These issues came to the fore in these case studies and have negatively impacted the outcome of the projects. Therefore in order to secure stakeholder engagement and involvement, project leadership must be mindful of these issues, work on reducing this tension and building trust between these stakeholder groups. Finally failure to manage the interest of only one key stakeholder could have a major negative impact on project outcome.

### **3.8.6 The NHS Context**

There are specific issues about the context (The NHS) of these projects that could aid with the understanding of the findings. The NHS has special characteristics: the key professional groups are very conservative, they evolved through many years of small changes rather than revolutionary or step change, and as a result they have been very resistant to any major changes. This is because such changes do not fit easily with the way they work or their daily practice. Clinicians will support a project when the benefits are very direct and clear, and aid their way of doing the work and their daily routines, as it was demonstrated in the PACS cases in project one.

NHS organisations are largely funded through the government and have a secure customer base, unlike private sector organisations that have to gain and maintain their customers to protect their income. This could explain the lack of organisational focus on benefits realisation and return on investment by NHS organisations. However this is slowly changing with the introduction of the foundation trusts that have more freedom in managing their finances and diversifying their business interests.

The NHS also has a ‘target culture’ which is a consequence of government policy and initiatives. Meeting the targets means NHS organisations can avoid major central interference in their operation and be assured of the provision of the necessary funding. This culture has hindered innovation in the NHS and limited the attention and focus on initiatives that are not mandated by a national target.

NHS organisations, if they are to freely compete in the market place and be independent of central control, which is the intended vision for the foundation trusts, need to plan and operate beyond the government targets. They must also carefully assess the required investment necessary for their business survival and prosperity. This assumes that the government will allow these trusts to practice their independence more freely, and set out their own targets and agendas, within an overall operating framework.

Finally the existing culture in the NHS has created tension between managers and clinicians, as managers are generally perceived as the ‘government agents’ whose only objective is to achieve central targets, while the clinicians “have the patients’ interests at heart”. If IT projects are to be more successful in the future, this adversarial culture needs to change and the relationship between the professional groups within NHS organisations must improve and their different interests and priorities reconciled.

### **3.8.7 Research and Questions**

There were two objectives of this research. The first was *to identify the factors or combination of factors that have most influence on the benefits realised from IT projects in the NHS.*

- Using the findings from the study of the two less successful projects, the key factors that contributed to the underachievement have been identified. These factors, and the reasons behind them, were clearly illustrated by the NVIVO outcomes and were further discussed in chapters 3.

The second objective of this research was *to identify the reasons for the recorded lack of benefits realisation of IT projects in the NHS.*

. This objective was achieved by examining previous project success models and stakeholder models, and applying them in the NHS context, and by explaining the findings of this research in relation to these models.

The research question that guided this research was.

How can the realisation of benefits from IT-enabled change be improved across the NHS?

The research question has been addressed and the supporting evidence includes the outcomes of the NVIVO analysis, and the discussions in chapter 3. The factors that had most positive influence on the limited benefits realised in the two projects were:

1. The deployment of tried and tested technologies, with a proven set of operational benefits in both projects
2. The effective management of change on the hospital side in the OCS project
3. Good clinical engagement and involvement in the OCS project

The realisation of benefits could be improved by addressing the areas listed below:

1. Poor management of the pre-project stage, which meant that the projects struggled from the start
2. The limited content of the business cases, and lack of rigour in assessing and approving business cases by project or organisation boards
3. Inexperienced, ineffective and/or unstable project leadership
4. Lack of trust between key stakeholders within the NHS: clinicians/managers, PCTs/Hospitals, PCTs/GPs
5. Poor management of change, particularly redesigning clinical processes that impact the patient journey in the NHS
6. Lack of attention to, and organisational governance of, benefits realisation, starting with a poor benefits plan
7. Lack of skills in managing change and lack of appreciation of the impact of managing change effectively on project outcome
8. Poor integration of technology with the (clinical) daily working practices

Finally, starting projects with robust business cases will improve their chances of success, and having strong and credible leadership, able to address the critical problems that most projects will have, will increase the probability of a successful project outcome i.e. the business case will be delivered.

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